TECHNICAL SUPPORT SECTION
DOCUMENT

130159

REMEDIAL CONSTRUCTION WORK PLAN

VOLUME V

APPENDIX L - DRAFT OPERATION, MAINTENANCE AND MONITORING PLAN

Summit National Superfund Site
Deerfield Township of Portage County, Ohio

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Summit National Superfund Site
Deerfield Township of Portage County, Ohio

MAY 1993

REF. NO. 2372 (52)

CONESTOGA-ROVERS & ASSOCIATES

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APPENDIX L

DRAFT OPERATION, MAINTENANCE AND MONITORING PLAN

SUMMIT NATIONAL FACILITY TRUST

DRAFT

OPERATION, MAINTENANCE AND MONITORING PLAN

Summit National Superfund Site
Deerfield Township of Portage County, Ohio

MAY 1993

REF. NO. 2372 (35)

CONESTOGA-ROVERS & ASSOCIATES

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PREFACE

The Draft Operation, Maintenance and Monitoring Plan (Plan) for the Summit National Superfund Site (Site) presented herein has been prepared prior to the commencement of the Remedial Action (RA) to be implemented at the Site, as required by the Consent Decree and therefore is in draft form.

Following the construction and start-up of the groundwater extraction and treatment subsystems at the Site, this Plan will be reviewed and revised to include information obtained from actual operating experience and a final Operation, Maintenance and Monitoring Plan, based on this draft Plan will be prepared for the Site.

SUMMIT NATIONAL SUPERFUND SITE
OPERATION, MAINTENANCE AND MONITORING PLAN

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SECTION 1

1.0 INTRODUCTION

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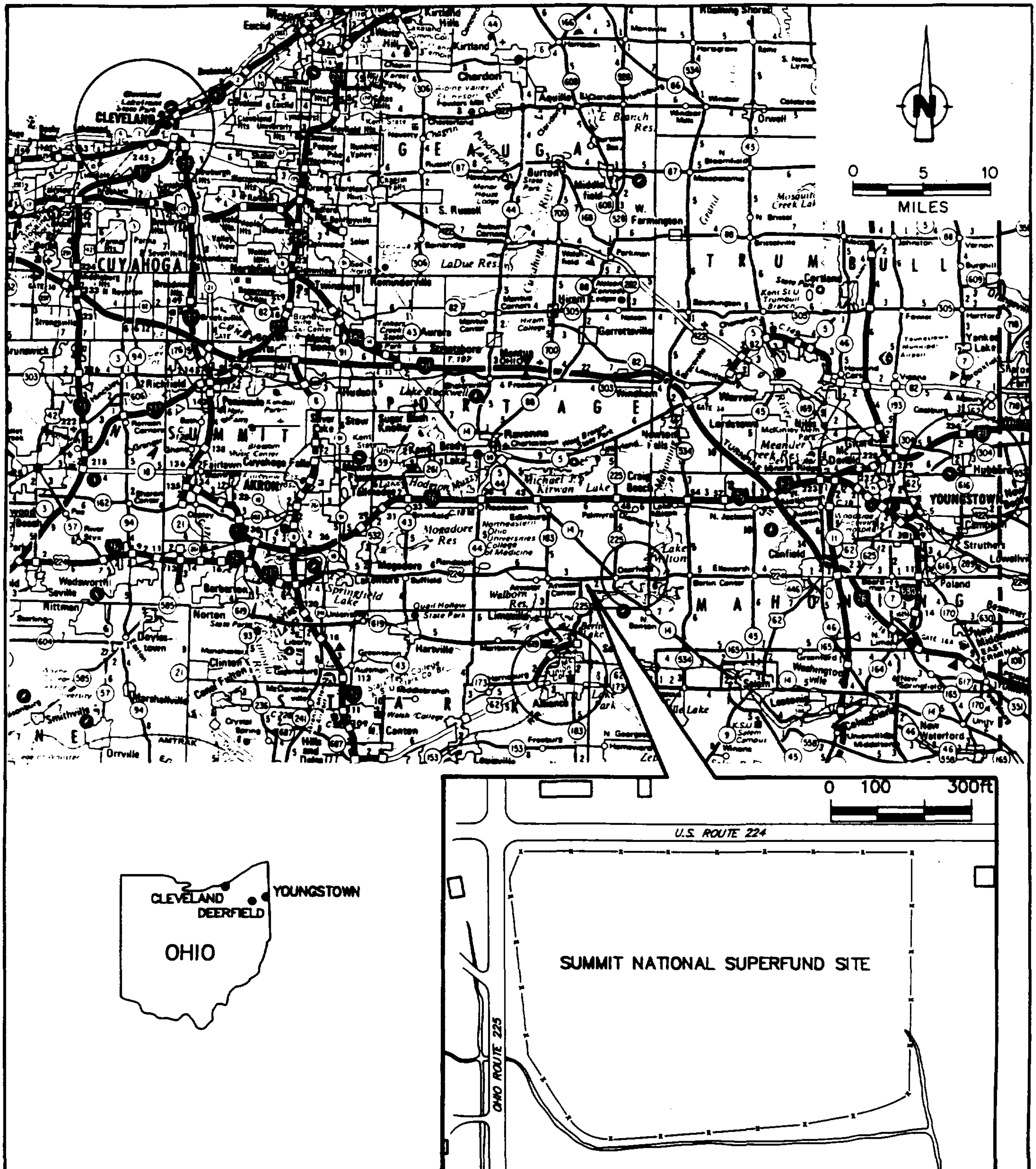
1.0 BACKGROUND INFORMATION

The Summit National Superfund Site (Site) is located in the Deerfield Township of Portage County, Ohio, at the intersection of Ohio Route 225 and U.S. Route 224, approximately 45 miles southeast of Cleveland, Ohio. The location of the Site is illustrated in Figure 1.1.

The Site was originally used as a coal strip mine and contained a coal wash pond and coal stockpile, prior to its use by Donald Georgehoff, Summit National Services and/or Summit National Liquid Disposal Services for the operation of a hazardous waste treatment, recycling, storage and disposal facility.

Prior to implementation of remedial work activities, operations at the Site resulted in uncontrolled releases of hazardous materials. Subsequent Site investigations indicated that there was significant contamination in Site soils, and that groundwater contamination existed both on Site and off Site.

Potentially Responsible Parties (PRPs) entered into negotiations with the United States Environmental Protection Agency (USEPA) and the Ohio Environmental Protection Agency (OEPA) to complete a Remedial Design/Remedial Action (RD/RA) for the Site. The negotiations culminated in an agreement between a group of Settling Defendants and USEPA, which agreement has been incorporated into a Consent Decree. The United States District Court for the Northern District of Ohio, Eastern Division, by Judge David D. Dowd entered the Consent Decree on June 11,



SOURCE: OHIO OFFICIAL TRANSPORTATION MAP, 1987

figure 1.1

SITE LOCATION
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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2372-10(35) OCT.6/92 REV.0

1991, in Civil Action No. C81-1961. Pursuant to the terms of the Consent Decree, the Consent Decree was recorded with the Portage County Recorder in the Portage County Record of Deeds, Volume IIII, page 780-1140.

The RA which was to be implemented at the Site is detailed in Appendix B of the Consent Decree, a document entitled "Statement of Work (SOW) and Appendices to Statement of Work, Appendix A - Soil Removal and Treatment, Appendix B - Groundwater Extraction System, Appendix C - Site Cover, Appendix D - Groundwater Treatment System, Appendix E - Schedule of Activities, Summit National Superfund Site, Deerfield Township of Portage County, Ohio", printed on December 14, 1989. The RA which was implemented at the Site is described in detail in a document entitled "Remedial Construction Work Plan, Summit National Superfund Site, Deerfield Township of Portage County, Ohio", printed in _____ 1993 and approved by USEPA and OEPA on _____, 1993. The final design of the RA components are detailed in the report entitled "Final Design Report, Summit National Superfund Site, Deerfield Township of Portage County, Ohio" printed in _____ 1993 and approved by USEPA and OEPA on _____, 1993. The major components of the RA implemented at the Site included the following:

i) excavation and placement under the on-Site soil cover of off-Site impoundment and drainage ditch sediments;

ii) installation and long-term operation and maintenance of a groundwater extraction system for hydraulic containment, collection and extraction of Site-related contaminated groundwater, consisting of

an overburden pipe and media drain installed along the southern boundary of the Site and extending north along the east and west boundaries of the Site, and a bedrock extraction well system consisting of six extraction wells adjacent to the alignment of the overburden pipe and media drain;

iii) installation and long-term operation and maintenance of a water treatment system to treat groundwater extracted by the groundwater extraction system;

iv) relocation of sections of the 6-foot high chain link fence with three strands of barbed wire across the top that secures the Site;

v) excavation and on-Site treatment of on- and off-Site contaminated soils, pond sediments, contaminated soils associated with buried containerized materials, stockpiled contaminated soils from the 1987 USEPA emergency response action, and off-Site east-perimeter contaminated soils;

vi) removal and treatment/disposal of the contents of buried drums, containers and underground tanks;

vii) demolition of on-Site buildings and structures to grade and placement of the resultant debris under the on-Site cap;

viii) installation and long-term maintenance of a 2-foot thick permeable vegetated soil cap over the Site;

ix) implementation of access/deed restrictions;

x) implementation of an effectiveness groundwater monitoring program, including installation of additional monitoring wells and piezometers, hydraulic monitoring and groundwater quality monitoring; and

xi) long-term monitoring of Site surface runoff.

1.1 PURPOSE AND ORGANIZATION OF PLAN

The purpose of the Operation, Maintenance and Monitoring Plan presented herein is to provide a summary of the operation, maintenance and monitoring requirements for the various components of the RA implemented at the Site. The Operation, Maintenance and Monitoring Plan is organized as follows:

i) Section 1 presents a general introduction to the Site and the purpose and organization of the Operation, Maintenance and Monitoring Plan;

ii) Section 2 presents a description of the various remedial action subsystems constructed at the Site;

iii) Section 3 presents reference drawings which illustrate the construction features of the various subsystems;

iv) Section 4 presents the Site organizational structure for operation, maintenance and monitoring requirements;

v) Section 5 presents the start-up and operation procedures for the groundwater extraction, treatment and discharge subsystems, and various other procedures which are required for the Site;

vi) Section 6 presents a listing of major equipment items;

vii) Section 7 presents the Site maintenance requirements;

viii) Section 8 presents a summary of the Site monitoring requirements;

ix) Section 9 presents the criteria for the termination of groundwater extraction and treatment systems and the basis for project closeout;

x) Section 10 presents the Site Health and Safety Plan;

xi) Section 11 presents a summary of the reports which document in detail the investigations, remediation programs and construction programs which have been conducted at the Site; and

xii) Section 12 presents the Site Quality Assurance Project Plan, including sampling and analysis procedures, for the Site monitoring requirements specified in the Consent Decree.

SECTION 2

2.0 DESCRIPTION

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2.0 DESCRIPTION

The implemented remedial design and long-term operation, maintenance and monitoring activities are designed to address three major environmental objectives, namely:

i) protection and enhancement of the quality of the groundwater and recovery of the natural resource of groundwater in the vicinity of the Site;

ii) protection of the quality of surface waters in the vicinity of the Site; and

iii) protection of the public from direct contact with contaminated material on or near the Site, and from the migration of surficial Site contaminants from the Site via surface runoff, wind erosion and volatization.

Implementation of remedial work activities at the Site resulted in the construction of a number of subsystems, which as a whole, are designed to accomplish the above objectives, and which require long-term operation and maintenance. These subsystems include the following:

i) Groundwater Extraction/Collection Subsystem;

ii) Groundwater Treatment Subsystem;

iii) Treated Water Discharge Subsystem;

iv) Building Subsystem; and

v) Site Cover Subsystem.

Containment and extraction of the groundwater beneath the Site is accomplished by a pipe and media groundwater collection drain in the Water Table Unit (WTU) and six Intermediate Unit (IU) extraction wells located adjacent to the pipe and media drain. Groundwater collected by the pipe and media drain, drains into the wet well located approximately mid-way on the pipe and media drain. Groundwater is pumped from the extraction wells to the closest manhole on the pipe and media drain, and eventually also collects in the wet well. Groundwater collected in the wet well is pumped through an underground forcemain to an on-Site groundwater treatment plant, where the groundwater is treated by aeration, pH adjustment and solids removal, biological degradation, media filtration and liquid phase carbon adsorption. Finally, the treated water is discharged to a surface water drainage ditch at the northeast boundary of the Site. Figure 2.1 illustrates the extent of the groundwater extraction and discharge systems, and Figure 2.2 presents a layout of the groundwater treatment system.

The Site as shown on Figure 2.1, is covered by a permeable vegetated soil cover, and is graded for stormwater management. The entire Site is secured by a perimeter chain link security fence with three strands of barbed wire across the top.

A general description of each of the subsystems is presented in the following sections, and applicable detailed Record Drawings are listed in Section 3.

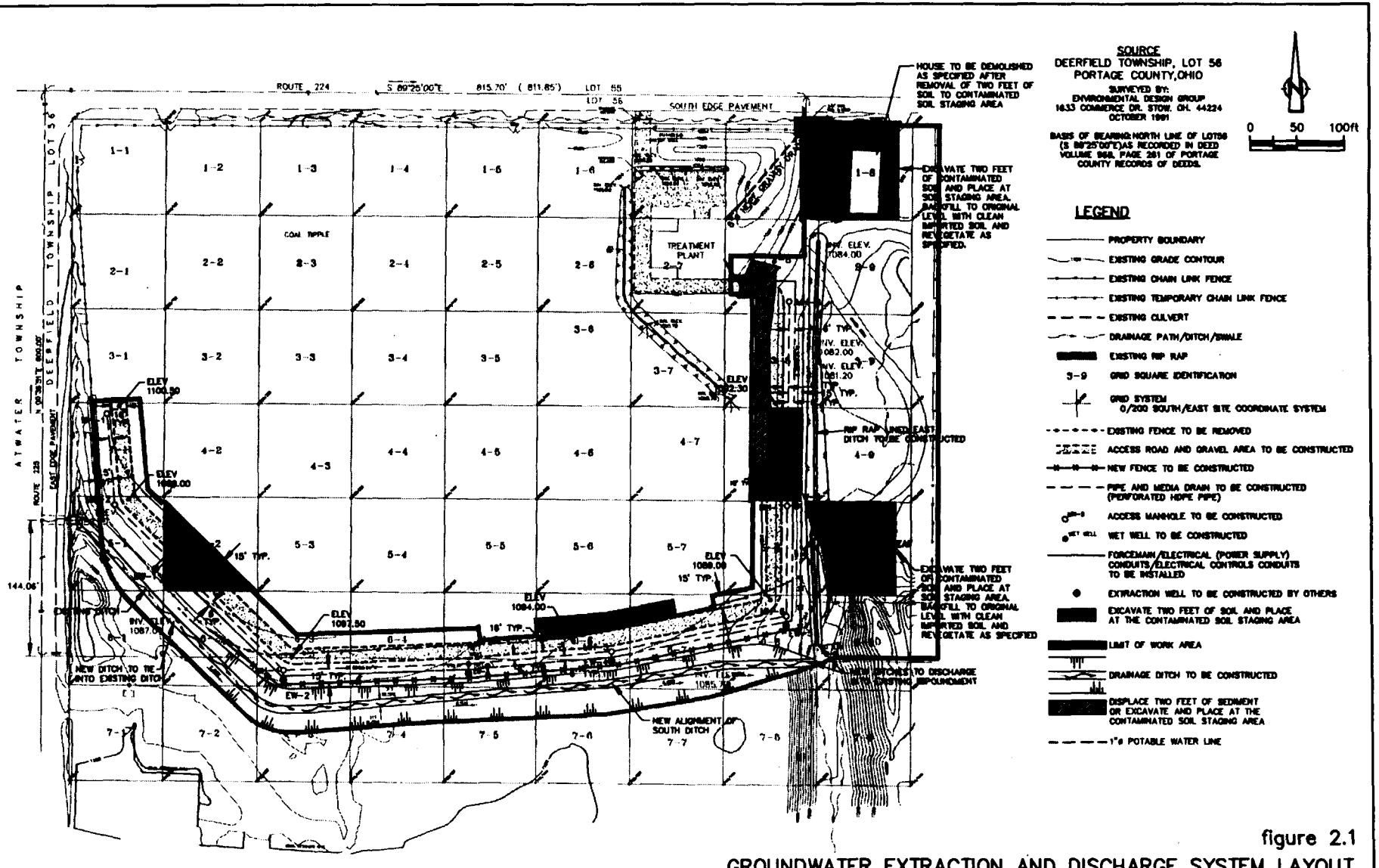

figure 2.1

GROUNDWATER EXTRACTION AND DISCHARGE SYSTEM LAYOUT
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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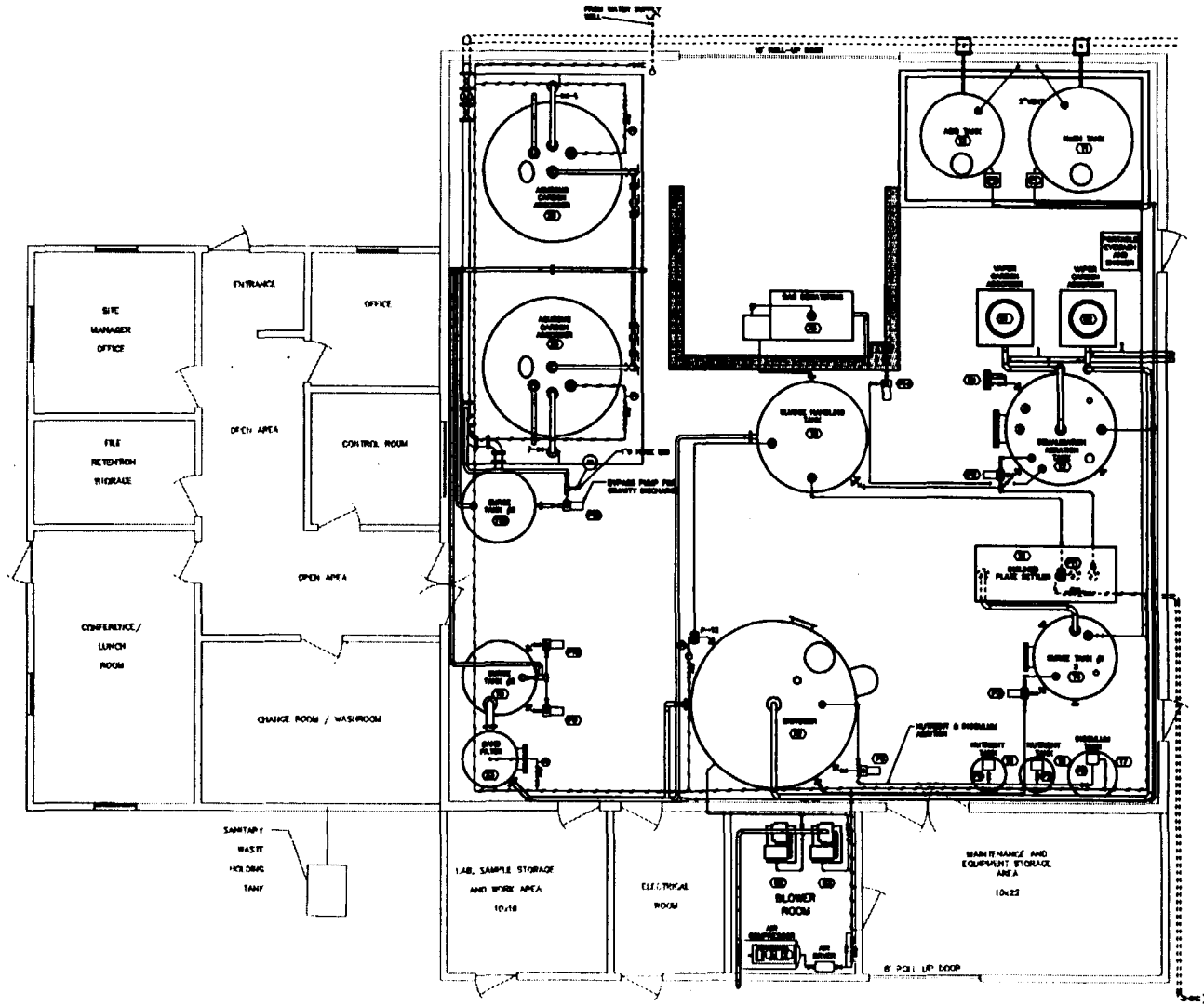

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figure 2.2
GROUNDWATER TREATMENT SYSTEM LAYOUT
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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2.1 GROUNDWATER EXTRACTION/COLLECTION SUBSYSTEM

The groundwater extraction system for the Site has been designed to provide hydraulic containment and collection of Site-related contaminated groundwater, and consists of the following components:

i) a pipe and media groundwater collection drain in the Water Table Unit (WTU);
ii) six groundwater extraction wells in the Intermediate Unit (IU); and
iii) a collection and transfer system, including a wet well, to collect and transfer the groundwater contained by the pipe and media drain and the extraction wells to the on-Site groundwater treatment facility.

2.1.1 Pipe and Media Drain

The location of the pipe and media drain and associated manholes and wet well are presented on Figure 2.1. The perforated drain pipe has been positioned as close as possible to the base of the WTU. The minimum slope of the perforated drain pipe is 0.5 percent, ensuring positive drainage to the collection sump in the wet well.

A typical section presenting details of the pipe and media drain is provided on Figure 2.3. The bedding material for the perforated drain pipe has a minimum hydraulic conductivity of 1×10^{-2} centimeters per second (cm/s). A non-woven, polypropylene filter cloth is wrapped around the perforated drain pipe and encompasses the bedding material.

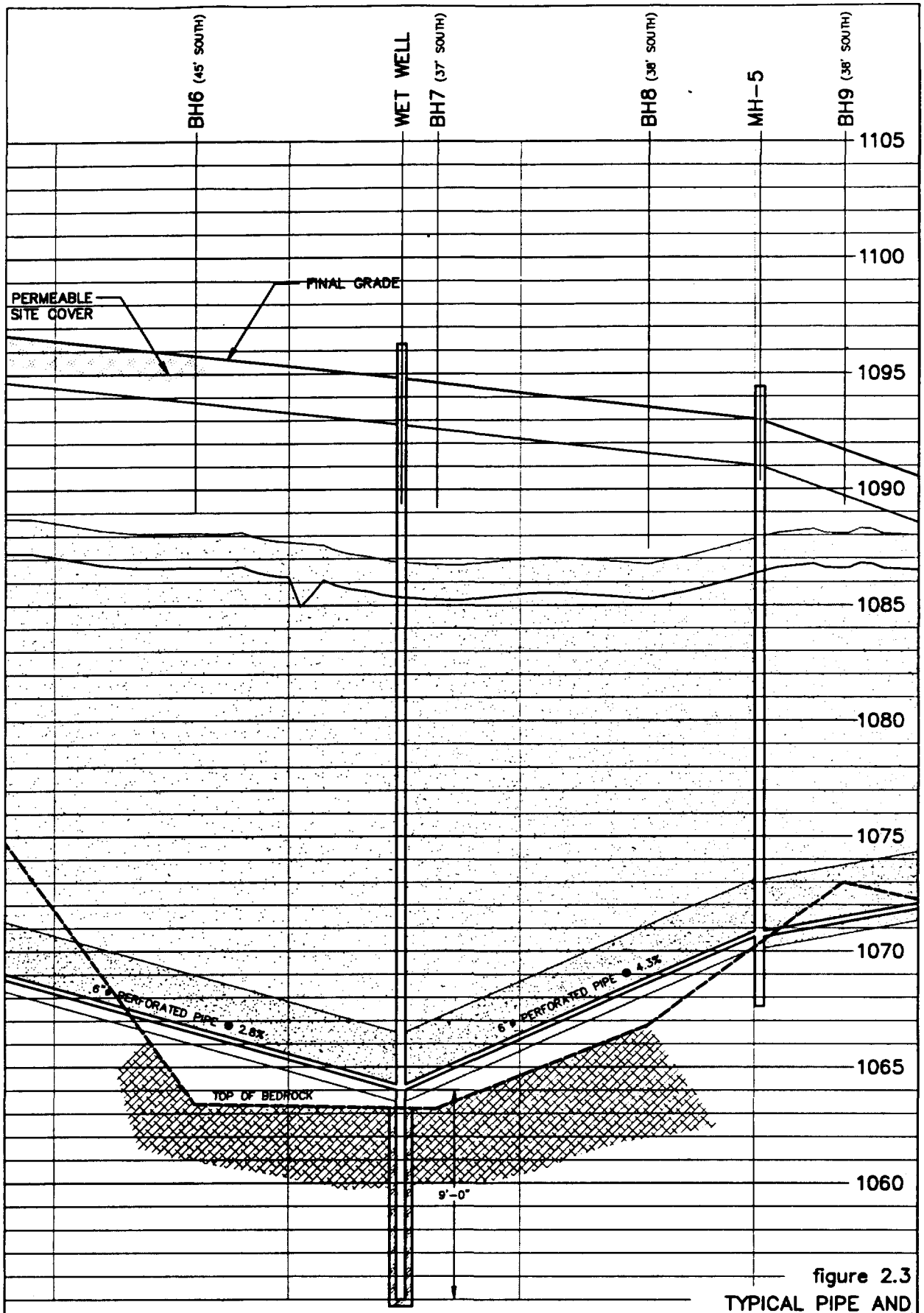

figure 2.3
TYPICAL PIPE AND MEDIA DRAIN SECTION
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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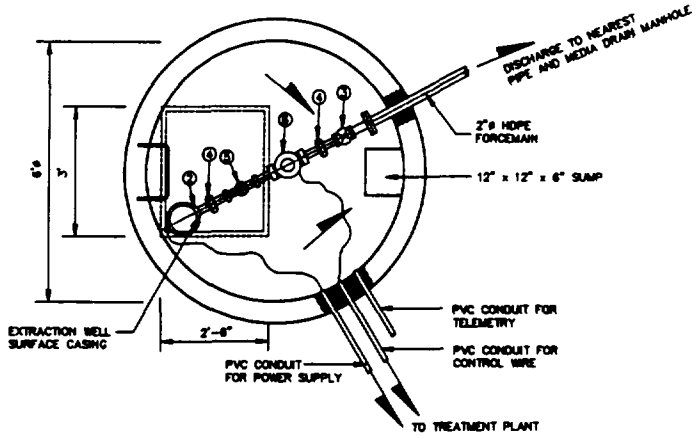

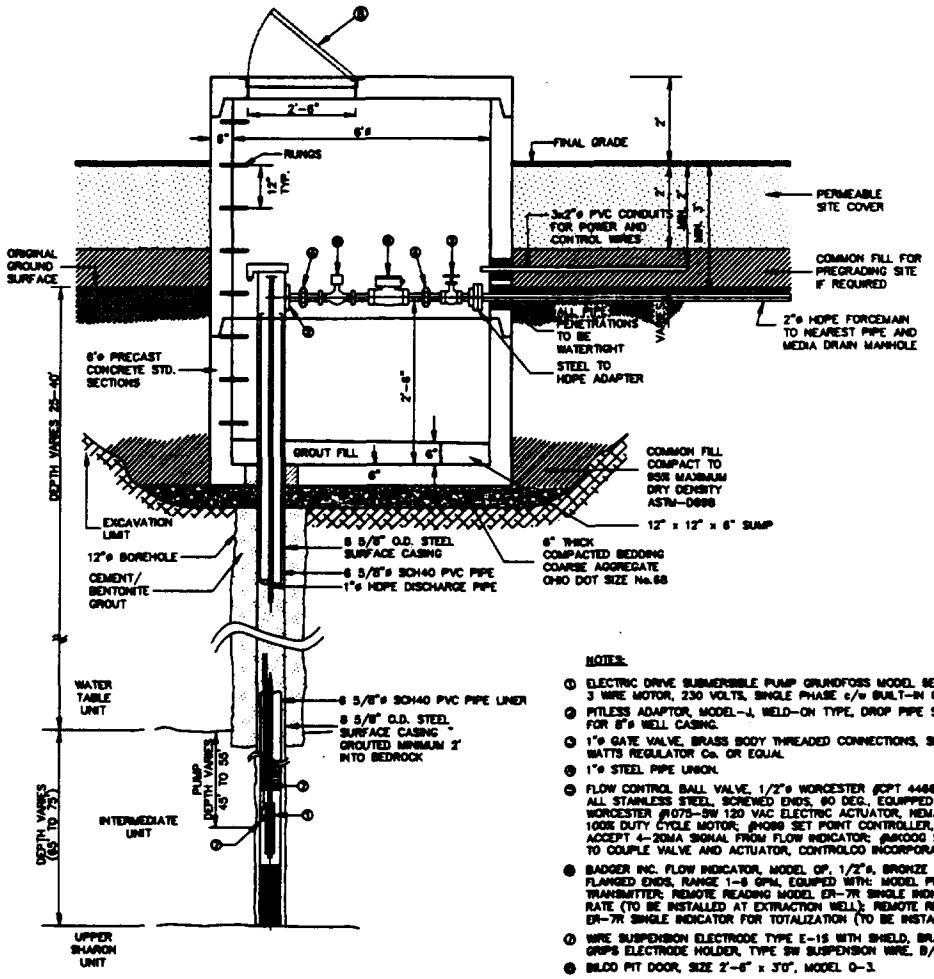

NOTES:

1. ELECTRIC DRIVE SUBMERSIBLE PUMP GRUNDFOSS MODEL SE8; 1/3 HP, 3 WIRE MOTOR, 230 VOLTS, SINGLE PHASE c/w BUILT-IN CHECK VALVE.
2. PITLESS ADAPTOR, MODEL-J, WELD-ON TYPE, DROP PIPE SIZE 1"ø FOR 8"ø WELL CASING.
3. 1"ø GATE VALVE, BRASS BODY THREADED CONNECTIONS, SERIES WGV, WATTS REGULATOR Co. OR EQUAL
4. 1"ø STEEL PIPE UNION.
5. FLOW CONTROL BALL VALVE, 1/2"ø WORCESTER #CPT 4468PMS EC80, ALL STAINLESS STEEL, SCREWED ENDS, 90 DEG., EQUIPPED WITH: WORCESTER #1075-SW 120 VAC ELECTRIC ACTUATOR, NEMA IV HOUSING, 100% DUTY CYCLE MOTOR, #MC099 SET POINT CONTROLLER, DESIGNED TO ACCEPT 4-20MA SIGNAL FROM FLOW INDICATOR; #MK000 5/8 MOUNTING KIT TO COUPLE VALVE AND ACTUATOR, CONTROLCO INCORPORATION.
6. BADGER INC. FLOW INDICATOR, MODEL OP, 1/2"ø, BRONZE BODY, KYNAR PISTON, FLANGED ENDS, RANGE 1-6 GPM, EQUIPED WITH: MODEL PFT-420 FLOW TRANSMITTER; REMOTE READING MODEL ER-7R SINGLE INDICATOR FOR FLOW RATE (TO BE INSTALLED AT EXTRACTION WELL); REMOTE READING MODEL ER-7R SINGLE INDICATOR FOR TOTALIZATION (TO BE INSTALLED AT TREATMENT PLANT).
7. WIRE SUSPENSION ELECTRODE TYPE E-1S WITH SHIELD, BRASS MATERIAL c/w CORD GRIPS ELECTRODE HOLDER, TYPE SW SUSPENSION WIRE, B/W CONTROLS.
8. BILCO PIT DOOR, SIZE 2'-6" x 3'0", MODEL D-3.

figure 2.4

EXTRACTION WELL DETAIL
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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2.1.2 Intermediate Unit (UI) Extraction Wells

Six groundwater extraction wells (EW-1, EW-2, EW-3, EW-4, EW-5 and EW-6) have been installed in the IU for hydraulic containment and collection of Site-related contaminated groundwater in the IU. The location of the IU extraction wells are shown on Figure 2.1. Each extraction well pump discharges groundwater through an underground forcemain to the closest pipe and media drain manhole or the wet well.

2.1.2.1 Well Casing and Screen

The IU extraction wells are completed to a total depth of approximately 50 feet below grade. The steel well casings are 8 5/8-inch diameter and stainless steel screens are 6 5/8-inch diameter. The extraction wells are screened through the entire IU, a distance of approximately 30 feet.

The as-constructed extraction well data are presented in Table 2.1.

2.1.2.2 Well Pumps

The pumps in the IU extraction wells are stainless-steel centrifugal submersible pumps. The pumps are rated for 1 to 7 gallons per

TABLE 2.1

AS-CONSTRUCTED INTERMEDIATE UNIT
GROUNDWATER EXTRACTION WELL DATA
SUMMIT NATIONAL SUPERFUND SITE

	ELEVATIONS (Feet AMSL)			
Well	*Top of Well Casing*	*Base of Screen*	*Top of Forcemain*	*Base of Pump*
EW-1				
EW-2				
EW-3				
EW-4				
EW-5				
EW-6				

TABLE 2.2

INITIAL PUMPING RATES
GROUNDWATER EXTRACTION WELLS
SUMMIT NATIONAL SUPERFUND SITE

EXTRACTION WELL	*INITIAL EXTRACTION RATE (GPM)*
EW-1	
EW-2	
EW-3	
EW-4	
EW-5	
EW-6	

minute (gpm) and are equipped with 1/3 HP motors. The initial IU extraction well pumping rates are presented in Table 2.2.

2.1.2.3 Pump Chamber

Each extraction well-head is secured in an underground pump chamber. The pump chambers are precast concrete manhole units with an internal sump, steps and a lockable hinged access door. A typical layout of the control piping in each extraction well pump chamber is illustrated on Figure 2.4, and described in the following subsections.

2.1.2.3.1 Riser Pipe and Pitless Adaptor

The 1-inch diameter high density polyethylene (HDPE) riser pipe for each pump serves to position and hold the pump in the correct alignment at the desired elevation, as well as to contain the flow of water from the pump. The HDPE riser pipe extends to an HDPE/steel adaptor fitting connected to a pitless adaptor. The pitless adaptor allows removal of the pump and riser from the well casing by pulling up on a pulling rod which connects to the pitless adaptor from above. The pitless adaptor outlet connects into the control piping header inside the well casing with an O-ring gasket providing a leak-tight seal.

2.1.2.3.2 Control Piping Header

Located on the control piping header next to the outlet of the pitless adaptor is a union fitting. Following the union fitting is a flow control ball valve, and a flow indicator with an electronic flow transmitter and flow rate indicator. The flow control ball valve uses a signal from the flow transmitter to maintain the flow from the pump at a present level. The flow transmitter also sends a signal to a remote reading flow totalizer in the treatment building. Following the flow indicator is a union fitting and a gate valve which may be used to isolate the pump and allow removal of the piping header between the two union fittings. The gate valve has a sampling port which may be used to collect groundwater samples. A steel to HDPE adaptor connects the steel piping header to the HDPE forcemain.

2.1.2.4 Forcemain

The six IU extraction wells each pump groundwater through 2-inch diameter HDPE forcemains into the nearest manhole on the pipe and media drain as shown on Figure 2.1. All forcemains are installed with a minimum three feet of cover to ensure that the forcemains remain below frost penetration level.

2.1.3 Collection and Transfer System

2.1.3.1 Wet Well Chamber

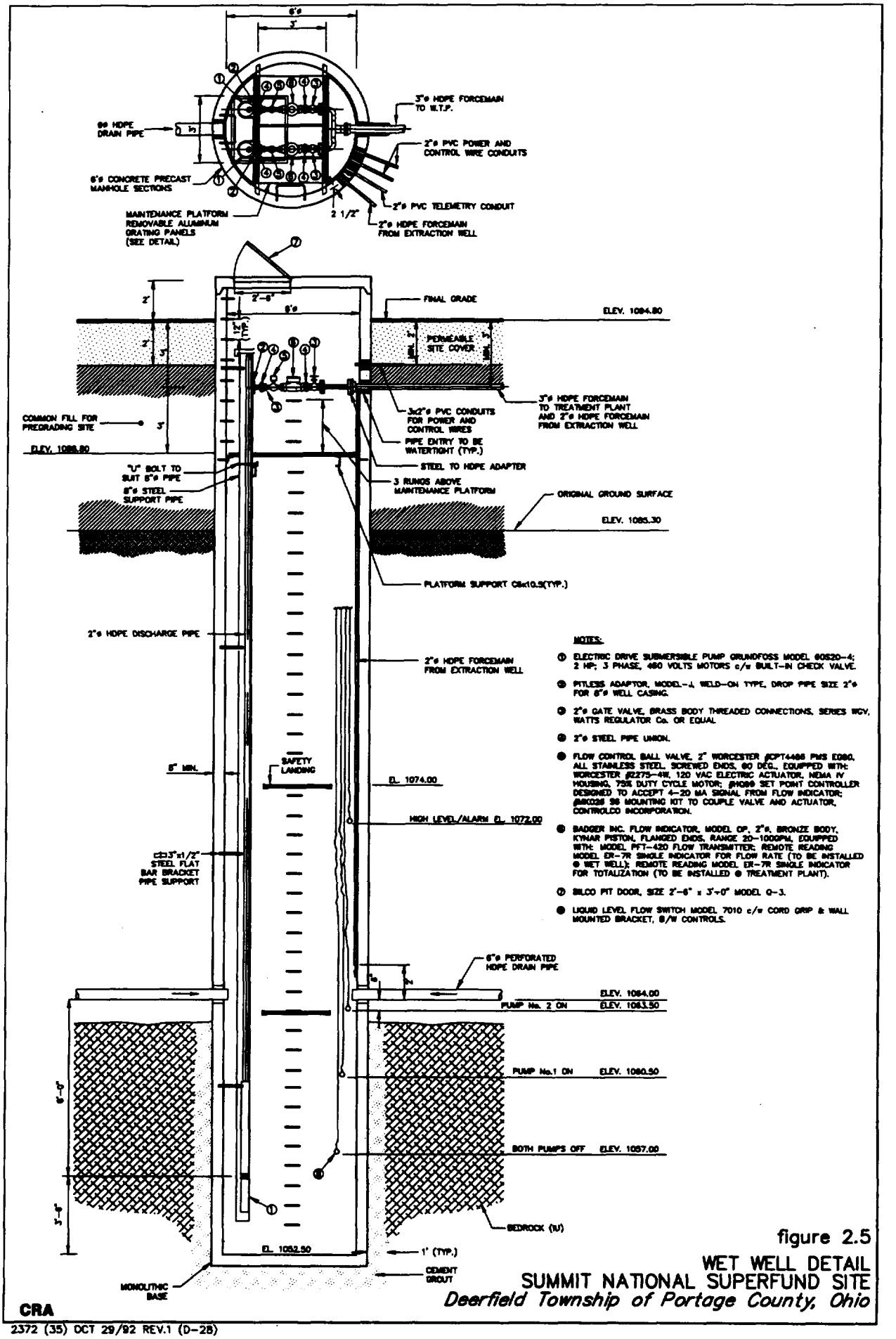
The groundwater pumped into the pipe and media drain manholes from the IU extraction wells and the groundwater collected in the pipe and media drain pipe flows into a wet well located on the pipe and media drain, as shown on Figure 2.1. Details of the wet well chamber are provided on Figure 2.5. The wet well chamber is constructed of 6-foot diameter precast concrete manhole units with steps, safety landings, and a lockable hinged access door. The wet well is constructed to a total depth of approximately 40 feet.

2.1.3.1.1 Wet Well Pumps

The wet well is equipped with two 2-HP electrical submersible pumps. The pumps are rated for 40 to 45 GPM. The duplex pumping system is designed for single or dual pump operation based on the water level in the wet well as described in Section 2.1.3.3.

2.1.3.1.2 Riser Pipe and Pitless Adaptor

Each wet well pump and 2-inch HDPE riser pipe are contained in a 6-inch steel support pipe. The HDPE riser pipe extends to an HDPE to steel adaptor fitting connected to a pitless adaptor. The pitless



NOTES:

① ELECTRIC DRIVE SUBMERSIBLE PUMP GRUNDFOSS MODEL 60S20-4; 2 HP; 3 PHASE, 460 VOLTS MOTORS c/w BUILT-IN CHECK VALVE.

② PITLESS ADAPTOR, MODEL-J, WELD-ON TYPE, DROP PIPE SIZE 2"ø FOR 6"ø WELL CASING.

③ 2"ø GATE VALVE, BRASS BODY THREADED CONNECTIONS, SERIES WGV, WATTS REGULATOR Co. OR EQUAL

④ 2"ø STEEL PIPE UNION.

⑤ FLOW CONTROL BALL VALVE, 2" WORCESTER #CPT4466 PWS ED80, ALL STAINLESS STEEL, SCREWED ENDS, 90 DEG., EQUIPPED WITH: WORCESTER #227S-4W, 120 VAC ELECTRIC ACTUATOR, NEMA IV HOUSING, 75% DUTY CYCLE MOTOR; #HC88 SET POINT CONTROLLER DESIGNED TO ACCEPT 4-20 MA SIGNAL FROM FLOW INDICATOR; #MKC228 SS MOUNTING KIT TO COUPLE VALVE AND ACTUATOR, CONTROLCO INCORPORATION.

⑥ BADGER INC. FLOW INDICATOR, MODEL OP, 2"ø, BRONZE BODY, KYNAR PISTON, FLANGED ENDS, RANGE 20-1000GPM, EQUIPPED WITH: MODEL PFT-420 FLOW TRANSMITTER; REMOTE READING MODEL ER-7R SINGLE INDICATOR FOR FLOW RATE (TO BE INSTALLED @ WET WELL); REMOTE READING MODEL ER-7R SINGLE INDICATOR FOR TOTALIZATION (TO BE INSTALLED @ TREATMENT PLANT).

⑦ SILCO PIT DOOR, SIZE 2'-6" x 3'-0" MODEL G-3.

⑧ LIQUID LEVEL FLOW SWITCH MODEL 7010 c/w CORD GRIP & WALL MOUNTED BRACKET, B/W CONTROLS.

figure 2.5

WET WELL DETAIL

SUMMIT NATIONAL SUPERFUND SITE

Deerfield Township of Portage County, Ohio

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adaptor allows removal of the pump and riser pipe from the wet well by pulling on a pull rod which connects to the pitless adaptor from above. The pitless adaptor outlet connects into the control piping header with an O-ring gasket providing a leak-tight seal.

2.1.3.1.3 Control Piping Header

The control piping header in the wet well consists of two 2-inch control piping lines from each wet well pump converging into a single 3-inch tee fitting connected to the discharge forcemain. Located on the two control piping lines next to the outlets of the pitless adaptors are union fittings followed by flow control ball valves, and flow indicators equipped with electronic flow transmitters and remote reading indicators which display instantaneous flow rates. The flow control ball valves accept signals from the flow transmitters to maintain the flow rates from each pump at present levels. The flow transmitters also send signals to remote reading flow totalizers in the treatment building.

Following each flow indicator is a union fitting and a gate valve which may be used to isolate the corresponding section of the control piping header from the discharge forcemain. The two gate valves have sampling ports which may be used to collect groundwater samples. The two union fittings at each end of the two control piping lines allow for removal and servicing of the control piping components. The two 2-inch control piping lines are connected to a 3-inch tee fitting followed by as steel/HDPE adaptor connected to the discharge forcemain.

2.1.3.2 Forcemain

Water from the wet well is pumped through a below-grade 3-inch diameter butt-fusion welded HDPE forcemain to the groundwater treatment building as shown on Figure 2.1. The forcemain is installed with a minimum of three feet cover, to ensure that the forcemains remain below frost penetration level. The flow is discharged at the treatment plant into the Equalization Tank (T2) (see Section 2.2).

2.1.3.3 Electrical Controls

The extraction wells are equipped with high-level start and low-level stop switches to shut down the extraction well pumps on low water level and automatically restart the extraction well pumps when the wells have recovered. The manholes on the pipe and media drain are equipped with high-level alarm switches to shut down the associated extraction well and upgradient wells along the gravity drain to prevent further flooding of the manholes.

The wet well is equipped with high-level start switches and low-level stop switches to start and stop the wet well pumps for alternate or dual operation together in accordance with the wet well levels. The wet well is equipped with a high-high level to stop the extraction wells before the

groundwater level which maintains downgradient hydraulic capture is exceeded.

A telemetering system is installed from each extraction well, each manhole on the pipe and media drain, and from the wet well, to the groundwater treatment building control center to provide the operating status of the extraction well pumps (i.e. on or off), the operating status of the wet well pumps (i.e. on or off), high water level alarm indications in the wet well, high water level alarm indicators in the pipe and media drain manholes and totalized flow readings at each pump location. Instantaneous flow readings for each pump, and control of the flow rate from each pump is provided in each pump chamber by the flow control ball valve and flow transmitter on each control piping line.

The groundwater extraction well system is serviced from a central motor control centre (MCC) located in the on-Site treatment plant. Separate 460 volt/three phase power fed to the wet well extraction pump motor and 230 volt/single phase power fed to each extraction well pump motor from the MCC provides remote and independent operation of the pumps. A separate low-voltage direct burial signal wire system is installed to provide connection between the flow transmitters and liquid level sensors located in the well chambers and the remote reading flow totalizers and the MCC located in the treatment building. All electrical conductors are protected by PVC conduits and the electrical components inside the well chambers are rated explosion proof.

In summary, the groundwater extraction collection system is controlled as follows:

i) groundwater is pumped from the six groundwater extraction wells via individual forcemains to manholes or the wet well along the alignment of the trench and media drain system;

ii) each extraction well pump is protected by a pump down level control system to automatically shut down the pump on low water levels and allow restarting the pump on well recovery;

iii) the water levels in the manholes are monitored by level sensors to provide an alarm at high water levels and shut down the extraction well feeding the manhole and also shut down upgradient extraction well pumps along the gravity drain;

iv) the pumping rate from each extraction well and wet well pump is controlled by a flow control ball valve connected to a setable flow indicator/transmitter complete with local flow rate indication and connection to flow totalizers located at the treatment center;

v) the collected groundwater is pumped from the wet well by a duplex pumping system designed to operate alternatively or together based on the water level in the wet well;

vi) one medium level float switch starts a wet well pump and one low level float switch stops this pump, alternating the pumps on subsequent starts;

vii) a medium-high level float switch starts the second wet well pump and the low level float switch stops both pumps;

viii) a high level float switch signals an alarm condition on abnormally high water levels; and

ix) a high-high level float switch stops the groundwater extraction wells.

2.2 GROUNDWATER TREATMENT SUBSYSTEM

2.2.1 Unit Operations

Figure 2.2 presents the layout of the groundwater treatment subsystem equipment. The groundwater treatment subsystem is comprised of the following unit operations:

i) caustic addition unit,
ii) equalization/aeration tank unit,
iii) inclined plate settler unit,
iv) acid addition unit,
v) bioreactor unit,
vi) continuous sand filter unit,
vii) liquid phase carbon unit,
viii) sludge dewatering unit, and
ix) compressed air supply unit.

During normal operation of the groundwater treatment subsystem, approximately 42 gallons per minute (gpm) will be treated by the entire treatment train. When influent flow rates exceed 42 gpm, which may occur during periods of heavy rainfall or during construction dewatering activities, a setable flow control valve directs water through the entire treatment train during flow rates of up to approximately 50 gpm, and any

additional flow up to 50 gpm (total 100 gpm) is directed through a partial system by-pass to the sand filter unit.

The groundwater treatment train unit operations are described in the following sections.

2.2.1.1 Caustic Addition Unit

The caustic addition unit is designed to adjust the groundwater influent pH to 8 to 10 using an 18 percent caustic solution. The pH is adjusted to enhance precipitation of the inorganic solids from the groundwater for subsequent removal by the inclined plate settler (X1).

The caustic addition unit is comprised of a 3,000-gallon caustic storage tank (T1) with a 2,500-gallon design operating volume, and a caustic metering pump (P1) which adds the caustic solution to the extended groundwater influent flow before it enters the equalization/aeration tank (T2).

2.2.1.2 Equalization/Aeration Tank Unit

The extracted groundwater flow from the groundwater extraction subsystem is discharged at the treatment plant into the equalization/aeration tank unit which serves to provide flow equalization to

the groundwater treatment system and provides aeration treatment to remove approximately 90 percent of the chlorinated organic compounds in the groundwater influent.

The equalization/aeration tank unit is comprised of a 3,800-gallon equalization/aeration tank (T2) with a 3,000-gallon design operating volume, a 100 cubic foot per minute (cfm) blower (B1), one 2,000-pound vapor phase carbon adsorber (C1) which is designed to remove approximately 95 percent of the chlorinated organic compounds in the air flow effluent from T2, and a transfer pump (P2) which discharges water from T2 to the inclined plate settler unit.

2.2.1.3 Inclined Plate Settler Unit

The inclined plate settler unit is comprised of a 10' x 4' x 14' high gravity flow inclined plate settler (X1) containing 125 square feet of fiberglass reinforced plastic plates and an air operated diaphragm sludge pump (P11) which pumps sludge from X1 to the sludge handling tank (T9).

The inclined plate settler unit is designed to remove approximately 60 percent of iron, 40 percent of calcium, 20 percent of magnesium, from the flow entering X1. The effluent water flow from X1 is gravity discharged to surge tank #1 (T4).

2.2.1.4 Acid Addition Unit

The acid addition unit is designed to adjust the water effluent pH from X1 to 6.5-7.5 using a 32 percent by weight HCl solution. This range of pH is needed for proper operation of the subsequent Biotower Unit.

The acid addition unit is comprised of a 3,000-gallon acid storage tank (T3) with a 2,500-gallon operating volume, an acid metering pump (P4), and a 2,000-gallon surge tank #1 (T4) with a 1,500-gallon operating volume. Effluent from X1 is mixed with acid solution injected into the flow prior to entering T4.

2.2.1.5 Biotower Unit

The biotower unit is comprised of a 20,300-gallon upflow biotower (X2) with an 18,190-gallon operating volume, a 3 hp biotower feed pump (P3) , two 110-gallon potassium phosphate and ammonium chloride nutrient addition tanks (T5 and T6) with mixers (M1 and M2), two air operated biotower nutrient metering pumps (P6 and P7), a 250-gallon biotower inoculum addition tank (T7) with metering pump (P5), two 15 hp biotower blowers (B2 and B3) which deliver 170 scfm during normal operation and 282 scfm during bump cycle, one 2,000-pound vapor phase carbon adsorber (C2) for odor control, a biotower air operated diaphragm sludge pump (P12), and a biotower recirculation pump (P8).

The biotower feed pump, P5, pumps water from surge tank #1 (T4) through the biotower, X2, and the continuous sand filter (X3) to surge tank #2 (T8).

The biotower is designed to remove approximately 80 percent of the organics and 5 percent of the metals in the influent to the biotower. The nutrient metering pumps (P6 and P7) add 0.1 gpm of nutrient to the influent to the biotower. Sludge from the biotower is pumped by pump P12 to the sludge handling tank (T9). During startup of the biotower, or when in recycle mode, the flow in the biotower is recirculated using pump P8.

2.2.1.6 Continuous Sand Filter Unit

The continuous sand filter unit is designed to remove approximately 100 percent of the biomass, 70 percent of the iron, and 25 percent of the metals in the effluent from the biotower (X2). The continuous sand filter (X3) has 12 square feet of filtration area. Effluent from the biotower (X2) enters the bottom of X3, and flows upward and exits the top of X3 and gravity flows into surge tank #2 (T8). A continuous backwash flow of approximately 5 to 10 percent of the filtered influent flow also exits the top of X3 and gravity flows into the sludge handling tank (T9).

Surge tank #2 (T8) has a 1,100-gallon operating volume and has two 2 hp surge tank transfer pumps (P9 and P10). Effluent from X3 gravity flows into T8. Pump-on and pump-off liquid level sensors in T8 are

used to cycle P9 and P10 which discharge water in T8 through the liquid phase carbon adsorbers (X4 and X5) to surge tank #3 (T10).

2.2.1.7 Liquid Phase Carbon Unit

The liquid phase carbon unit is designed to provide final polishing of the effluent from the preceding treatment units under the normal operating flow of 42 gpm. Flow exceeding 50 gpm will be bypassed directly to the continuous sand filter unit and the liquid phase carbon units for primary treatment.

The liquid phase carbon unit is comprised of two carbon adsorbers connected in series (X4 and X5) which will remove approximately 95 percent of the organics, 50 percent of the iron, and 5 percent of the metals from the influent entering the adsorbers. The adsorbers will provide approximately 100 minutes of retention time at the normal flow rate of 42 gpm.

The treated water effluent from the carbon adsorber unit flows into the 1,100 gallon surge tank #3 (T10) and gravity drains from T10 to the Treated Water Discharge Subsystem. The surge tank bypass pump (P15) may be used to discharge treated water from T10.

2.2.1.8 Sludge Dewatering Unit

Sludge pumped from the inclined plate settler by P11 and from the biotower by P12 and the continuous backwash effluent from the continuous sand filter (X3) is discharged to the sludge dewatering unit.

Influent to the sludge dewatering unit flows into the 4,200-gallon sludge handling tank (T9) which has a 3,900-gallon operating volume. Approximately once per day, five days per week, the sludge in T9 is pumped out using an air operated diaphragm sludge dewatering pump (P13) which pumps sludge into a bag dewatering filter (X6). X6 is designed to remove approximately 75 percent of the metals, and 100 percent of the biomass from the sludge. The filtered effluent from X6 is discharged into a sump tank (T11) and is pumped by the sump pump (P14) to the equalization/aeration tank, T2, for treatment.

2.2.1.9 Compressed Air Supply Unit

The compressed air supply unit is comprised of a 120-gallon, 100 psi air compressor (X7) and associated compressed air supply lines which supply compressed air to the air operated diaphram sludge pumps, P11, P12 and P13, the sand filter, and the carbon adsorbers (X4 and X5) for carbon discharge.

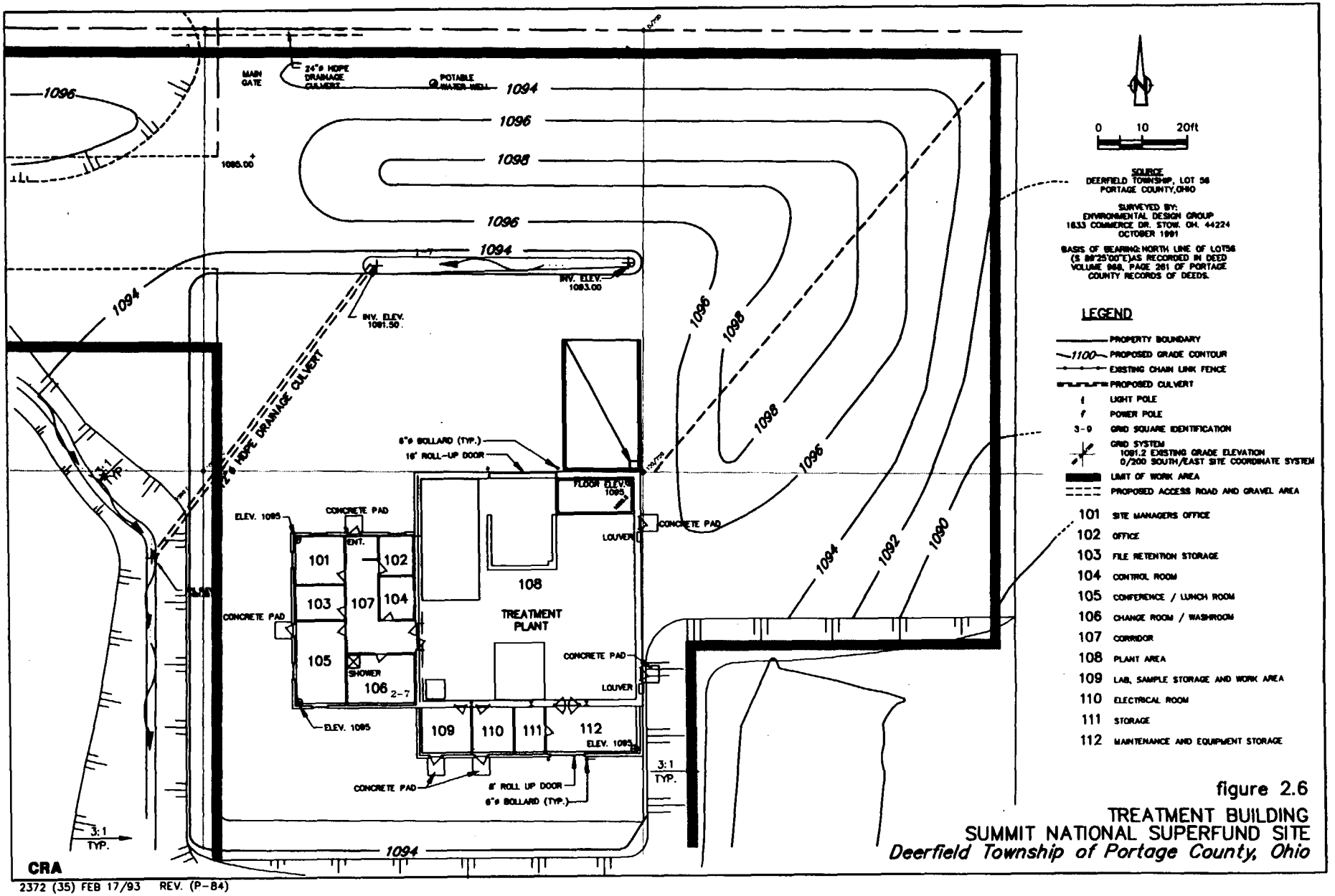

figure 2.6

TREATMENT BUILDING
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

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2.3 TREATED WATER DISCHARGE SUBSYSTEM

Treated effluent from the on-Site treatment plant is collected in the 1,100-gallon surge tank #3 (T10). The treated effluent is discharged from T10 through a 6-inch diameter HDPE gravity discharge pipe to a rip-rap structure located in the surface water drainage ditch at the northeast boundary of the Site, as shown on Figure 2.1. A series of existing surface drainage ditches then conveys the water approximately 1 1/2 miles, discharging to the northwest limit of Berlin Lake.

2.4 BUILDING SUBSYSTEM

A layout of the groundwater treatment building is presented on Figure 2.6.

2.4.1 Security of Treatment Building

The treatment building is protected from unauthorized entry by a security system. The exterior doors of the treatment building are provided with contact monitor switches, the windows are provided with sensor tape, and the interior of the building is provided with movement monitoring devices. Together, these monitoring devices are wired to a central security monitoring station. The security system is programmed to detect unauthorized entry during unmanned hours and upon such detection,

relay a message to an off-Site security firm. The security firm then informs the Site off-duty operator of treatment building security breaches.

Arming and disarming the security system is discussed in Section 5.1.

2.5 SITE COVER SUBSYSTEM

As discussed in Section 2.0, the Site is covered by a high permeability final soil cover. This cover is comprised of an 18-inch layer of loam covered by a 6-inch layer of vegetated topsoil. The Site has been graded for stormwater management to provide surface water runoff to the south and east drainage ditches along the Site perimeter.

2.5.1 Site Security

The Site is surrounded by chain-link security fence. The security fence consists of an 8-foot high, 2-inch chain-link security fence. The chain-link security fence has lockable man gates and traffic gates to provide access to the Site. The extent of the security fence and location of gates is shown on Figure 2.1.

SECTION 3

3.0 REFERENCE DRAWINGS

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3.0 REFERENCE DRAWINGS

Conestoga-Rovers and Associates (CRA) prepared as-constructed Record Drawings of the various remedial construction programs undertaken at the Site.

A summary of the Record Drawings which are included with this manual as reference drawings is presented in Table 3.1.

TABLE 3.1

AS-CONSTRUCTED REFERENCE DRAWINGS
SUMMIT NATIONAL SUPERFUND SITE

DRAWING NO.	*TITLE*	*ENGINEER*
C1	Existing Conditions	CRA
C2	Site Work	CRA
C3	Site Grading Plan	CRA
C4	Typical Sections	CRA
C5	Site Work Details	CRA
C6	Erosion Control	CRA
C7	Chemical Unloading Pad	CRA
C8	Foundation Plan	CRA
C9	Floor Plan	CRA
C10	Foundations Sections and Re Bar Detail	CRA
C11	North and East Elevations	CRA
C12	West and South Elevations	CRA
C13	Building Cross Sections	CRA
C14	Roof Plan	CRA
C15	Room Schedule	CRA
C16	Process Equipment Layout	CRA
C17	Mechanical Sections "B" and "C"	CRA
C18	Mechanical Sections "A" and "D"	CRA
C19	Hydraulic Gradient	CRA
C20	HVAC and Plumbing	CRA
C21	Site Electrical Service	CRA
C22	Lighting and Recepticals	CRA
C23	Motor and Disconnect Location	CRA
C24	MCC Layout and Power Diagram	CRA
C25	PLC and I/O Layout	CRA
C26	I/O Cabinet and Control	CRA
C27	Process and Instrumentation Diagram	CRA

SECTION 4

4.0 ORGANIZATION STRUCTURE

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4.0 ORGANIZATIONAL STRUCTURE

The Summit National Facility Trust (SNFT) was founded to conduct the remedial action at the Site. Figure 4.1 presents the Site organizational structure, and identifies the various personnel, or firms, and their main responsibilities within the organization.

As illustrated, the Trustees hold the management responsibility for the Site. The day to day operation of the Site is the primary responsibility of the Site Manager and Site Operator. Descriptions for the two Site positions are presented in the following sections.

4.1 SITE POSITIONS

4.1.1 Site Manager

The Site Manager reports to the Trustees of the SNFT, and is responsible for the overall management of the remediation activities at the Site. The Site Manager has the overall responsibility to ensure that the Site operation, maintenance, monitoring and inspection requirements, as stipulated by the SNFT, the various operation and maintenance manuals prepared for the Site and the Consent Decree are fulfilled. The Site Manager is responsible for the maintenance of the Site data base of monitoring results and inspection reports and for the timely preparation of the mandatory Site reports to the SNFT and to the various Agencies.

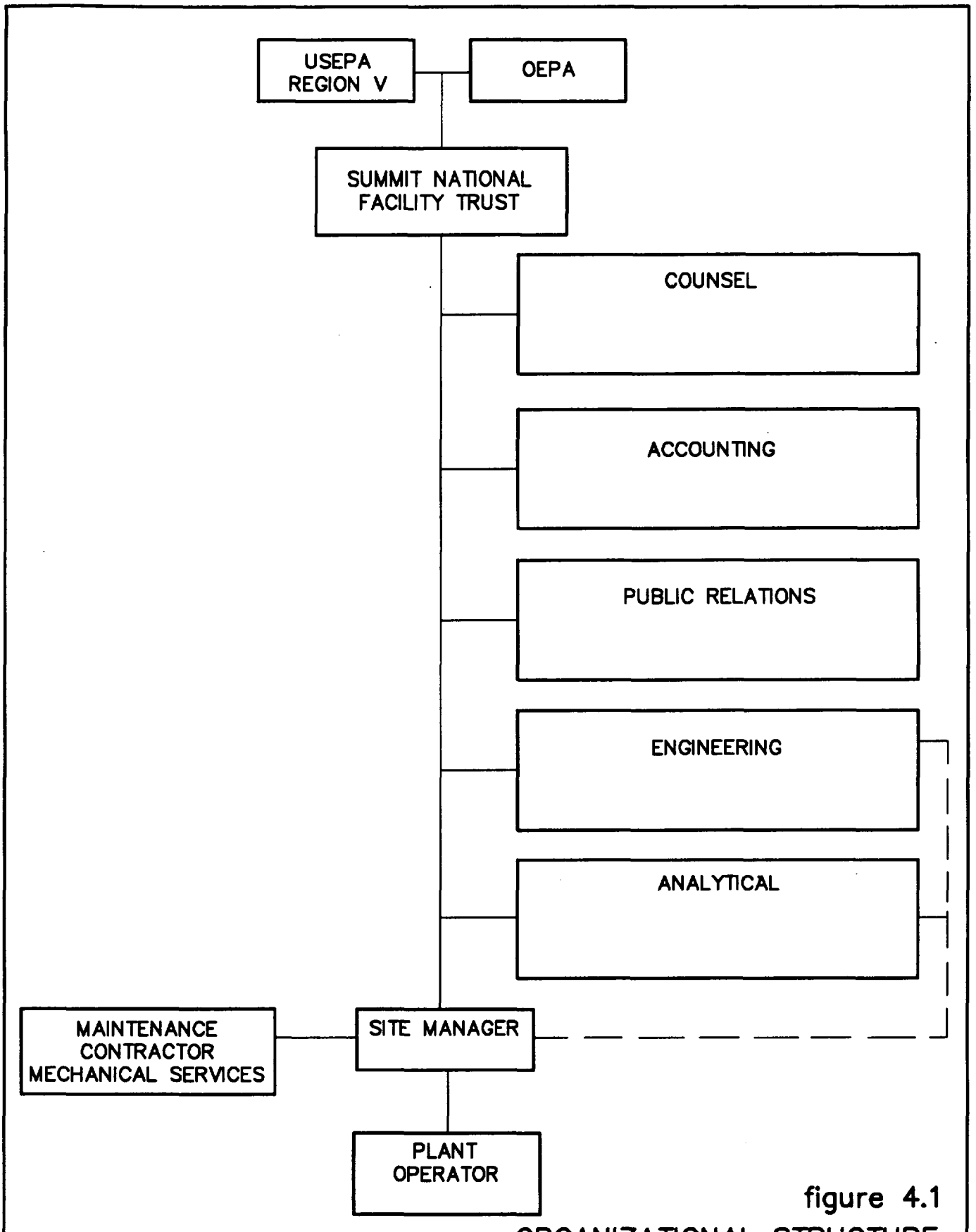

figure 4.1

ORGANIZATIONAL STRUCTURE
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

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The Site Manager's duties include, but are not necessarily limited to, the following:

i) the overall management of the day to day operation, maintenance, monitoring and inspection requirements;

ii) the preparation of the annual evaluation report required by the consent Decree and other reports as required by the SNFT and the Agencies;

iii) financial accounting for supply and equipment purchases, payroll, and disbursements associated with the operation, maintenance and monitoring requirements of the Site;

iv) attendance at meetings regarding the Site operation, maintenance and monitoring activities;

v) provide liaison at the Site with various equipment suppliers, consulting engineers, Agency representatives, and contract services companies regarding the operation, maintenance and monitoring activities;

vi) inspection of the Site components including the Site cover, security fences, buildings and grounds to ensure that these components are maintained according to the requirements stipulated by the Summit National Facility Trust;

vii) maintenance and entering into the site data base the daily, weekly, monthly and semi-annual record keeping logs;

viii) assist the Plant Operator to maintain and repair Site components.

ix) perform the duties of the Plant Operator during the Plant Operator's absence from the Site (vacations, illness, etc.);

x) be available on a scheduled basis to report to the Site in response to alarm conditions during periods when the Site is unmanned (nights, holidays, weekends); and

xi) participate in and conduct safety meetings.

4.1.2 Plant Operator

The Plant Operator reports to the Site Manager and is primarily responsible for the day to day operation and maintenance of the Site groundwater extraction/collection subsystem and the groundwater treatment subsystem such as routine inspections, minor piping alterations, valve repair and replacement, pump repair, equipment cleaning and equipment greasing.

The Plant Operator's duties include, but are not necessarily limited to, the following:

i) operate and maintain all the Site equipment, including groundwater extraction/collection equipment and groundwater treatment equipment in an efficient manner and as may be determined by the Summit National Facility Trust;

ii) maintenance of a spare parts inventory for equipment, production supplies, and office supplies, and as such, is responsible for ordering of materials;

iii) drive the Site truck to deliver and pick up equipment and supplies;

iv) perform the day to day inspections, monitoring, adjustments, and data compilation, all in accordance with the Site operation requirements;

v) perform the day to day non scheduled maintenance, scheduled maintenance, and equipment servicing, all in accordance with the Site maintenance requirements;

vi) record daily well flow volume totalizer meter readings, treatment plant influent/effluent flow volume measurement readings, and complete all other daily, monthly and yearly operation logs for the Site;

vii) clean plant, locker room, office and conference rooms;

viii) perform the duties of the Site Manager during the Site Manager's absence from the Site (shift work, vacations, illness, etc.);

ix) be available on a scheduled basis to report to the Site in order to respond to alarm conditions when the Site is unmanned (nights, holidays, weekends); and

x) participate in and conduct plant safety meetings.

SECTION 5

5.0 OPERATION

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5.0 OPERATION

The Site groundwater extraction and groundwater treatment subsystems are designed to operate continuously with minimal operator supervision. The duties of the operators are concerned mainly with scheduled and unscheduled maintenance, data collection, and trouble shooting of system malfunctions. This section provides an overview for system startup, continuous operation, data collection, and system shutdown.

5.1 SITE ENTRY AND EXIT

The perimeter Site security fence gates are normally locked during hours which the on-Site treatment building is unmanned and are normally closed during manned hours. The Site office and treatment building is further protected from unauthorized entry by a security system. The security system automatically alerts an off-Site security firm should anyone enter the Site building and not properly disarm the security system. The procedure for disarming and arming the security system is presented in the following subsections.

5.1.1 Disarming Security System

- Unlock the main entrance door and proceed directly to the alarm panel.

- A beeping from the alarm panel serves to indicate the alarm system is activated. Immediately enter the designated code number sequence to disarm the alarm.
- The beeping will cease and a light on the alarm panel will indicate "in". This indicates that the system has been properly disarmed.

5.1.2 Arming Security System

- Securely close all outside doors.

- Proceed to the alarm panel.

- The "in" light should be the only illuminated light on the alarm panel. Should the "alarm" light be on, recheck all doors to ensure they are securely closed. The security system cannot be armed if the "alarm" light is on. If the "alarm" light is still on after rechecking all doors, contact the security service to help diagnose the problem.

- With the "in" light illuminated, enter the proper code number sequence to arm the security system.

- The "wait" light will illuminate, indicating that the security system is running a check. Wait at the alarm panel until this check is completed.

- When the "out" light illuminates, the system check is completed and the alarm panel will start beeping. Immediately exit through the main

entrance door, close the door, and lock it. Check to ensure that the lock has engaged.

- Plant is secure.

5.2 TREATMENT PLANT START-UP

A system "start-up" would be performed following a complete shutdown of the treatment system. As the groundwater treatment system is controlled by sensors located throughout the system, certain sensors must be satisfied before the plant can be fully started.

5.2.1 Pre-Start Instructions

5.2.1.1 Prerequisites

i) working knowledge of the entire operations manual;
ii) electrical distribution system in service;
iii) PCL control system in service; and
iv air compressor in service.

5.2.1.2 Precautions

i) check that all equipment is in a safe condition to operate;

ii) all rotating equipment guards and safety devices must be in place;

iii) emergency equipment is available and properly maintained and inspected; and

iv) all process equipment and piping should be pre-filled with water prior to starting pumps to prevent damage.

5.2.2 Groundwater Extraction Startup

i) pre-start conditions must be satisfied;

ii) valving set for normal steady state flow;

iii) all drain and bleed valves closed in treatment plant;

iv) level in equalization/aeration tank at or above set point of LSH-109;

v) treatment system equipment ready for operation:

- pumps on recycle,
- blowers on, and
- valving set for operation;

vi) start extraction well pumps, adjust valves to set flow; and

vii) turn on power to wet well pumps, adjust valves to set flow.

5.2.3 Groundwater Treatment Startup

i) pre-start conditions must be satisfied;

ii) valving set for normal steady state flow;

iii) pH adjustment system turned on and pumps set at proper flow rate;

iv) bypass biotower until bacteria acclimated to groundwater and ready for operation (approximately 4 days);

v) sludge handling system in service; and

vi) valving for normal series operation through the carbon beds.

5.2.4 Biotower Startup

i) fill vessel with groundwater, overflow valve closed;

ii) turn on blower and recycle pump;

iii) add inoculum (4 batches from inoculum tank will be required);

iv) add nutrients;

v) allow four days for acclimation;

vi) in approximately 10 gpm per day increments bring biotower on-line till at full flow rate;

vii) shut bypass valves around biotower; and

viii) sample as necessary during acclimation.

5.3 NORMAL OPERATION

The groundwater extraction subsystem and groundwater treatment subsystem are designed to operate continually, through the action of liquid level sensors, automatic flow control valves and shut-off switches throughout the system. The system is equipped with both automatic and manual system overrides to shut down both systems. The automatic controls shut the system down to prevent damage to equipment or an overflow

situation. The manual shutdown is to allow operators to perform maintenance and repairs.

The automatic controls are based on liquid level sensors throughout the treatment system. High liquid levels in a tank shut off the pump prior to that tank to prevent overflow. Low levels shut off the discharge pump for the tank to prevent pump damage. The controls will allow the system to restart once levels have reached a safe and proper level. All transfer pumps run continuously on recycle based on liquid level sensors, to minimize the wear on the pump due to continuous on/off operation.

The normal operation of the Site will include the following daily, weekly and monthly recording of process information.

5.3.1 Daily Recording

Daily process information will be logged on a Daily Process Log as shown in Figure 5.1 and will include:

i) process tank and sump liquid levels;
ii) flow totalizers for each extraction well and wet well pump;
iii) groundwater treatment subsystem influent and effluent flow totalizers; and
iv) pressures on pressure indicators through the system to verify pressure drops across equipment.

DATE: _____ INSPECTED BY: _____

TOTALIZED FLOW DATA		
LOCATION	GALLONS	COMMENTS
EW-1		
EW-2		
EW-3		
EW-4		
EW-5		
EW-6		
WW-1		
WW-2		
INFLUENT		
EFFLUENT		

TANK LEVEL DATA		
LOCATION	INCHES	COMMENTS
ACID (T3)		
CAUSTIC (T1)		
AERATION (T2)		
SURGE No.1 (T4)		
INOCULUM (T7)		
POTASSIUM (T6)		
AMMONIUM (T5)		
SURGE No.2 (T8)		
SURGE No.3 (T10)		
SLUDGE (T9)		
SUMP (T11)		

PRESSURE LEVEL DATA		
LOCATION	PSI	COMMENTS
AIR COMPRESSOR (X7)		
BIOTOWER BLOWER (B2)		
BIOTOWER BLOWER (B3)		
AERATION BLOWER (B1)		
CARBON ADSORBERS (X4/X5)		

figure 5.1

DAILY PROCESS LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

5.4 SYSTEM SHUTDOWN

Automatic system interrupts will occur if any of the following conditions exist:

i) high water level in MH-3 to MH-7 or wet well shuts off appropriate extraction well pump(s);
ii) low water level in wet well will stop first wet well pump;
iii) low-low water level in wet well stops both wet well pumps;
iv) high level in T2 shuts of wet well pumps;
v) low level in T2 shuts off P2;
vi) high level in T4 shuts off P2;
vii) low level in T4 shuts off P3;
viii) high level in T8 shuts off P3; and
ix) low level in T8 shuts off both P9 and P10.

The system allows for automatic restart for any of the above conditions, upon returning to normal operating status.

Manual system interrupts must be initiated by an operator. The entire system can be manually shut down from the control room, or the electrical room, or the treatment area. Each piece of equipment can also be individually shut down from the control room, the electrical room, or the treatment area. This allows the system to be shut down with an emergency kill switch in case of an emergency, or for manual override of the automatic system for maintenance or operating purposes.

Should a total system shutdown be triggered, the treatment plant will shut down in the following sequence:

i) extraction well pumps;

ii) wet well pumps;

iii) pH adjustment system;

iv) transfer pumps P2, P3, P9, P10;

v) sludge handling; and

vi) put biotower on recycle unless shutting down for maintenance.

A power failure will shut down all systems. After a power failure, the entire start up procedure must be followed, however, the biotower may not have to be reacclimated for a shut down occurring over a short period of time.

5.5 SLUDGE HANDLING

Approximately once per day, five days per week, the sludge tank (T9) will be pumped out. The sludge will be pumped into the sludge dewatering bag filter (X6) and the sludge will be allowed to dewater for approximately 24 hours. After the bags have been filled with sludge and have been dewatered, they will be placed on pallets located on a drain pad adjacent to the bag filter (X6) and will be allowed to further dewater for a minimum time period of 24 hours. The dewatered bags will subsequently be placed in a

dumpster located in the bag storage area outside of the treatment building prior to being disposed.

The dewatered sludge will be sampled on a regular basis to determine whether the dewatered sludge may be disposed in a sanitary or secure landfill, as discussed in Section 8.2.

5.6 POTENTIAL OPERATING PROBLEMS

The potential operating problems which may be encountered with the extraction/collection subsystem and the groundwater treatment subsystem are summarized in Table 5.1. The potential sources and solutions to the operating problems are also summarized in Table 5.1.

TABLE 5.1

POTENTIAL OPERATING PROBLEMS
GROUNDWATER TREATMENT SYTEM
SUMMIT NATIONAL SITE

PROBLEM		*POTENTIAL SOURCES OF PROBLEMS*	*SOLUTION*
GROUNDWATER EXTRACTION			
1.	No water to treatment system	- power failure	- prepare system for start-up
		- line leak	- find leak and repair
		- wet well dry	- verify system on recycle loops
		- line plugged	- find plug and clean
2.	Too much water to treatment system	- dewatering ponds	- slow down pumping
		- incorrect setting of valves at pumps	- reset valves to lower flow
		- heavy rain/flooding of Site	- slow down pumping
pH ADJUSTMENT - NaOH			
1.	No solids precipitation	- pH too low	
		• tank empty	- refill tank
		• NaOH pump rate too low	- readjusted/pump settling
		• NaOH strength too low	- verify aeration and tank recycle
		• poor mixing	- verify NaOH strength
		• meter malfunction	
2.	pH too high	- pump set too high	- readjust pump setting
		- pH meter malfunction	- pull meter and recalibrate, verify operation
EOUALIZATION/AERATION			
1.	Level control problems	- PLC breakdown	- call for programming assistance
		- control valve on recycle	- verify valve operation, repair or replace if needed
		- pump problem	- repair or replace
		- valve setting on pump forward	- readjust valve
		- line plugged	- find plug and clean
		- line/tank leak	- repair leak
2.	Blower problem	- pressure drop too high	- verify level and correct
		- level too high	- verify level and correct
		- line plugged	- find plug and clean
		- carbon plugged	- replace carbon
		- not running	- repair or replace

TABLE 5.1

POTENTIAL OPERATING PROBLEMS
GROUNDWATER TREATMENT SYTEM
SUMMIT NATIONAL SITE

PROBLEM		*POTENTIAL SOURCES OF PROBLEMS*	*SOLUTION*
SETTLER PROBLEM			
1.	Level problems	- leaking tank, line - plugged line, plugged plates	- find leak and repair - find plug and clean
2.	Sludge pump	- air to pump, compressor - pump operation - line leak, plug	- verify compressor operation, air line - check air pressure, and internals - find leak or plug and repair
pH READJUSTMENT OF SURGE TANK			
1.	Level	- leaking tank, line - plugged line - pump problem - instrument breakdown - valving	- find leak and repair - find plug and clean - repair or replace - verify operation - verify correct valve settings
2.	pH too low	- pump setting too high - pH meter malfunction - logic	- slow down pumping rate - pull meter and recalibrate, verify operation - call for programming assistance
3.	pH too high	- tank empty - pump problem - pump setting too low - line leak, plug	- refill tank - repair or replace - readjust pump setting - find leak or plug and repair
BIOREACTOR			
1.	Level	- pluggage in discharge - leak in tower	- find plug and clean - repair leak
2.	Operation/Activity	- microbial count or organic influent too low - nutrients level incorrect - microbial count too low - pH, DO out of specification - iron level too high	- verify influent water quality - verify nutrient addition operation - reinoculate - verify pH adjustment and blower operation - bump bioreactor

TABLE 5.1

POTENTIAL OPERATING PROBLEMS
GROUNDWATER TREATMENT SYTEM
SUMMIT NATIONAL SITE

PROBLEM	*POTENTIAL SOURCES OF PROBLEMS*	*SOLUTION*
BIOREACTOR (cont'd)		
3. Sludge Pump	- no air to sludge pump	- verify compressor operation
	- line leak, plug	- find leak or plug and repair
	- valving	- verify correct valve settings
	- recycle pump problem	- verify operation
4. Blower	- pressure drop high	- check for plug and clean
	- blower plugged	- repair blower or replace
	- valving	- verify correct valve settings
	- vent plugged	- find plug and clean
	- carbon plugged	- replace carbon
SAND FILTER		
1. Pressure drop	- line pluggage	- find plug and clean
	- backwash improper	- inspect internals
	- sand plugged up	- clean out sand
	- backwash improper	
	- overflow from bypass blocked	- verify sludge handling operation
	- sludge tank level too high	- check sludge dewatering
	- air malfunction	- verify compressor operation
2. Operation	- sand not functioning	- replace sand
	- solids too high from bioreactor	- bump reactor
	- solids removal in biotower	- bump reactor
SURGE TANKS		
1. Level	- PLC breakdown	- call for programming assistance
	- control valve	- verify valve operation, repair or replace
	- pump problem	- repair or replace
	- valve settings	- verify correct valve settings
	- plugged line	- find plug and clean
	- leaking tank, line	- find leak and repair
	- bypass flow (2nd pump)	- verify both pumps operating, repair replace

TABLE 5.1

POTENTIAL OPERATING PROBLEMS
GROUNDWATER TREATMENT SYTEM
SUMMIT NATIONAL SITE

PROBLEM	*POTENTIAL SOURCES OF PROBLEMS*	*SOLUTION*
CARBON		
1. Pressure drop	- carbon plugged	- replace carbon
	- line plug	- find plug and clean
	- internals plugged	- clean internals
2. Breakthrough	- carbon spent	- replace carbon
	- channeling	- mix up carbon, redistribute
	- leak	- repair or replace
SLUDGE HANDLING		
1. Level in tank	- overflow plugged	- find plug and clean
	- pluggage at tank bottom	- slurry up bottom and pump out
	- leak in line, tank	- find leak and repair
2. Bag dewatering	- dewatering system problem	
	• pump	- repair or replace
	• instruments	- verify correct operation
	• leaks in bag	- replace bag
	• overhead leak	- find leak and repair
	• underdrain leak	- find leak and repair
	• breakthrough	- replace bag
SUMP		
1. Level too high	- pump operation	- repair or replace
	- line plugged	- find plug and clean

SECTION 6

6.0 EQUIPMENT

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6.0 EQUIPMENT

The Site is composed of five subsystems as described in Section 2. These subsystems are:

i) Groundwater Extraction/Collection Subsystem;

ii) Groundwater Treatment Subsystem;

iii) Treated Water Discharge Subsystem;

iv) Building Subsystem; and

v) Site Cover Subsystem.

6.1 EQUIPMENT SPECIFICATIONS FORM

The major equipment and component parts associated with each of the five subsystems are summarized under the tab inserts of this Section. The equipment specifications sheets presented are intended as a duplicate copy of the equipment specifications filed in the Site office. The information presented on these equipment specification forms is intended to supplement the equipment manufacturer's literature and specifications filed in the Site office and presented in the various manuals filed in the Site's reference library. For each equipment specification form contained herein, a corresponding separate file is maintained in the Site office. A typical Equipment Specification Form is presented as Figure 6.1.

EQUIPMENT SPECIFICATION FORM

EQUIPMENT NO. _____

NAME _____

LOCATION _____

MANUFACTURER _____

DISTRIBUTOR _____

DESCRIPTION _____

MAINTENANCE _____

COMPONENT PARTS _____

SPARE PARTS _____

figure 6.1

TYPICAL EQUIPMENT SPECIFICATION FORM
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

6.2 SPARE PARTS INVENTORY

In order to maintain continuous operation of the Site subsystems and minimize equipment downtime, a spare parts inventory is required. The recommended spare parts to be maintained on Site for the various equipment items of each subsystem are identified on the equipment specification sheets discussed in Section 6.1 and are summarized in Table 6.1. This recommended spare parts inventory is summarized on the Spare Parts Inventory Log form, presented as Figure 6.2. The spare parts Inventory Log Form is prepared for ease of reference, inventory check, and ordering, such that the Site will maintain on hand the recommended spare parts.

6.3 EQUIPMENT MAINTENANCE

In order to achieve long-term operation from the various equipment items of each subsystem of the Site, routine maintenance of such equipment is required. Routine maintenance required for each major equipment item is summarized on the equipment specification sheets discussed in Section 6.1, and is further discussed in greater detail in Section 7.0.

TABLE 6.1

PRELIMINARY SPARE PART REQUIREMENTS
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM
SUMMIT NATIONAL SUPERFUND SITE

Equipment No.	*Spare Parts Requirement*	*Equipment No.*	*Spare Parts Requirement*
T1	none	C2	see C1
P1	spare pump and wet end	X3	none
T2	none	T8	none
B1	spare blower	P9 & P10	see P2
C1	spare adsorber	X4 & X5	none
P2	spare transfer pump	T10	none
X1	none	P15	see P2
P11	spare wet end and dry end kits	T9	none
T3	none	P13	none
P4	spare wet end	X6	spare bags and ties
T4	none	T11	none
X2	none	P14	none
P3	none	X7	none
T5 & M1	none	G1	2 spare gauges
T6 & M2	none	G2	2 spare gauges
P6 & P7	spare wet end	V1	2 each 3/4", 1", 2", 3"
T7	none	V2	2 each 1", 2", 3"
P5	see P11	V3	2 each 2", 3"
B2 & B3	none	V4	2 each 2", 3"
P12	spare wet end and dry end kits	S1	none
P8	none	S2	spare sensor

EQUIPMENT NO. _____ NAME _____

PART DESCRIPTION	PART NO.	MATERIAL OF CONSTRUCTION		NO. ON HAND	DATE AND NO. ORDERED		

figure 6.2

SPARE PARTS INVENTORY LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

TABLE OF CONTENTS

GROUNDWATER EXTRACTION/COLLECTION SUBSYSTEM -SS1

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-P1

NAME EXTRACTION WELL SUBMERSIBLE PUMPS

LOCATION EXTRACTION WELLS

MANUFACTURER Grundfos Pump Corporation

DISTRIBUTOR Central Pump
Dayton, Ohio
513-890-1206

DESCRIPTION Model 5E8; 1/3 HP; 3 wire Motor; 230 Volts; single phase; built in check valve

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X1

NAME EXTRACTION WELL PITLESS ADAPTERS

LOCATION EXTRACTION WELLS

MANUFACTURER Maas - Division of Surinak
Engineering and Manufacturing, Inc.

DISTRIBUTOR Muskego Industrial Park
S82 W19246 Apollo Drive
Muskego, WI 53150
414-679-3922

DESCRIPTION Model-J Weld on Type, Drop Pipe Size 1 in. Dia.
for 8 in. well casing

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X2

NAME EXTRACTION WELL UNIONS

LOCATION EXTRACTION WELLS

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 1-inch diameter, steel

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V1

NAME EXTRACTION WELL FLOW CONTROL BALL VALVES

LOCATION EXTRACTION WELLS

MANUFACTURER Worcester

DISTRIBUTOR

DESCRIPTION Flow control ball valve, 1/2" Ø Worcester #CPT 4466PMS EG60, all stainless steel, screwed ends 60 Deg. equipped with: Worcester #1075-5W 120 VAC Electric Actuator, NEMA IV Housing, 100% Duty Cycle Motor; #HQ99 set point controller designed to accept 4-20MA signal from flow indicator; #MKOOG S/6 mounting kit to couple valve and actuator

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO.	SS1-X4
NAME	EXTRACTION WELL FLOW INDICATORS
LOCATION	EXTRACTION WELLS
MANUFACTURER	Badger Meter Inc.
DISTRIBUTOR	
DESCRIPTION	Badger Inc. flow indicator, Model OP, 1/2" Ø, bronze body, Kynar piston, flanged ends, range 1-6 gpm, equipped with: Model PFT-420 flow transmitter; remote reading Model ER-7R single indicator for flow rate (to be installed at extraction well); remote reading model ER-7R single indicator for totalization (to be installed at treatment plant)
MAINTENANCE	
COMPONENT PARTS	
SPARE PARTS	

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V2

NAME EXTRACTION WELL GATE VALVES

LOCATION EXTRACTION WELLS

MANUFACTURER Watts Regulator Company

DISTRIBUTOR Disney-McLane Inc.
2704 Colerain Ave.
Cincinnati, Ohio
513-541-1682

DESCRIPTION Series WGV, brass body, threaded connections, 1 in. dia.

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V3

NAME EXTRACTION WELL SAMPLING VALVES

LOCATION EXTRACTION WELLS

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 1-inch/ 1/2-inch tee fitting with 1/2-inch sampling ball valve

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X3

NAME EXTRACTION WELL ELECTRODES

LOCATION EXTRACTION WELLS

MANUFACTURER Magnetek Controls, B/W Controls

DISTRIBUTOR Nelcor Inc.
5169 Wooster Pike
Cincinnati, Ohio 45226
513-871-2816

DESCRIPTION Wire suspension electrode
Type E-1S with shield, brass material complete with cord grip electrode holder, Type SW suspension wire and 1500 series induction relay

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X5

NAME EXTRACTION WELL CHAMBER COVERS

LOCATION EXTRACTION WELLS

MANUFACTURER Bilco

DISTRIBUTOR

DESCRIPTION Bilco Pit Door, Size 2'-6" x 3'-0", Model Q-3, lockable

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-P2

NAME WET WELL SUBMERSIBLE PUMPS

LOCATION WET WELL

MANUFACTURER Grundfos Pump Corporation

DISTRIBUTOR Central Pump
Dayton, Ohio
513-890-1206

DESCRIPTION Model 60S20 - 4; 2 HP; 3 Phase;
230 volts; built-in check valve

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X6

NAME WET WELL PITLESS ADAPTORS

LOCATION WET WELL

MANUFACTURER Maass - Division of Surinak
Engineering & Manufacturing Inc.

DISTRIBUTOR Muskego Industrial Park
S82 W19246 Appolo Drive
Muskego, WI 53150
414-679-3922

DESCRIPTION Model 7 Weld on Type, Drop Pipe Size 2 in.
dia. for 8 in. well casing

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X7

NAME WET WELL UNIONS

LOCATION WET WELL

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 2-inch, steel

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V4

NAME WET WELL FLOW CONTROL BALL VALVES

LOCATION WET WELL

MANUFACTURER Worcester

DISTRIBUTOR

DESCRIPTION Flow control ball valve, 2" Worcester #CPT 4466PMS EG60, all stainless steel, screwed ends 60 Deg. equipped with: Worcester #2275-4W 120 VAC Electric Actuator, NEMA IV Housing, 75% Duty Cycle Motor; #HQ99 set point controller designed to accept 4-20MA signal from flow indicator; #MK026 S6 mounting kit to couple valve and actuator

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X8

NAME WET WELL FLOW INDICATORS

LOCATION WET WELL

MANUFACTURER Badger Meter Inc.

DISTRIBUTOR W.R. Frew
Cincinnati, Ohio
513-561-3669

DESCRIPTION Badger Inc. flow indicator, Model QP, 2" Ø, bronze body, Kynar piston, flanged ends, range 20-100 gpm, equiped with : Model PFT-420 flow transmitter; remote reading Model ER-7R single indicator for flow rate (to be installed @ wet well); remote reading Model ER-7R single indicator for totalization (to be installed @ treatment plant)

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V5

NAME WET WELL GATE VALVES

LOCATION WET WELL

MANUFACTURER Watts Regulator Company

DISTRIBUTOR Disney-McLane Inc.
2704 Colerain Ave.
Cincinnati, Ohio
513-541-1682

DESCRIPTION Series WGV, brass body threaded connections;
2 in. dia.

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-V6

NAME WET WELL SAMPLING VALVES

LOCATION WET WELL

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 2-inch/1/2-inch steel tee fitting with 1/2-inch sampling ball valve

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X9

NAME WET WELL FLOAT SWITCHES

LOCATION WET WELL

MANUFACTURER Magnetek Controls, BW Controls

DISTRIBUTOR Nelcor Inc.
5169 Wooster Pike
Cincinnati, Ohio 45226
513-871-2816

DESCRIPTION Liquid Level Float Switch Model 7010
complete with cord grip, wall mounted
bracket and 1500 series induction relay

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X10

NAME WET WELL CHAMBER COVER

LOCATION

MANUFACTURER Bilco

DISTRIBUTOR

DESCRIPTION Bilco pit door, size 2'-6" x 3'-0" Model Q-3,lockable

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X11

NAME ACCESS MANHOLE FLOAT SWITCHES

LOCATION PIPE AND MEDIA DRAIN ACCESS MANHOLES

MANUFACTURER Magnatek Controls, B/W Controls

DISTRIBUTOR Nelcor Inc.
5169 Wooster Pike
Cincinnati, Ohio 45226
513-871-2816

DESCRIPTION Liquid level float switch model 7010 complete with cord grip and wall mounted bracket

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS1-X12

NAME FORCEMAIN

LOCATION BETWEEN EXTRACTION WELL AND MANHOLES AND BETWEEN WET WELL AND TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION High density polyethylene (HDPE)

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

GROUNDWATER TREATMENT SUBSYSTEM - SS2

Equipment	Description
SS2-T1	Caustic Storage Tank
SS2-P1	Caustic Storage Tank Metering Pump
SS2-T2	Equalization/Aeration Tank
SS2-B1	Equalization/Aeration Tank Blower
SS2-C1	Equalization/Aeration Tank Carbon Adsorber
SS2-P2	Equalization/Aeration Tank Transfer Pump
SS2-X1	Inclined Plate Settler
SS2-P11	Inclined Plate Settler Sludge Pump
SS2-T3	Acid Storage Tank
SS2-P4	Acid Metering Pump
SS2-T4	Surge Tank #1
SS2-X2	Biotower
SS2-P3	Biotower Feed Pump
SS2-T5 & M1	Potassium Phosphate Nutrient Tank and Mixer
SS2-T6 & M2	Ammonium Chloride Nutrient Tank and Mixer
SS2-P6 & P7	Nutrient Addition Metering Pumps
SS2-T7	Inoculum Addition Tank
SS2-P5	Inoculum Addition Metering Pump
SS2-B2 & B3	Biotower Blowers
SS2-P12	Biotower Sludge Pump
SS2-P8	Biotower Recirculation Pump
SS2-C2	Biotower Carbon Adsorber
SS2-X3	Sand Filter
SS2-T8	Surge Tank #2
SS2-P9 & P10	Surge Tank Transfer Pumps
SS2-X4 & X5	Liquid Phase Carbon Adsorbers
SS2-T10	Surge Tank #3
SS2-P15	Bypass Pump
SS2-T9	Sludge Handling Tank
SS2-P13	Sludge Dewatering Pump
SS2-X6	Dewatering Bag Filter
SS2-T11	Sump
SS2-P14	Sump Pump
SS2-X7	Air Compressor
SS2-G1	Magnehelic Air Pressure Gauges
SS2-G2	Water Pressure Gauges

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

GROUNDWATER TREATMENT SUBSYSTEM - SS2

Equipment	Description
SS2-V1	PVC Ball Valves
SS2-V2	Bronze Ball Valves
SS2-V3	Stainless Steel Ball Valves
SS2-V4	Regulating Globe Valves
SS2-S1	Liquid Level Sensors and Transmitters
SS2-S2	Electrochemical Sensors and Transmitters

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T1

NAME CAUSTIC STORAGE TANK

LOCATION TREATMENT BUILDING

MANUFACTURER Highland Tank & Mfg. Company
Rd #3, Rte 30
Stoystown, Pa
814-893-5701

DISTRIBUTOR

DESCRIPTION 3000 gallon steel, flat bottom, dished top
7'6" OD, 10' SSH
Painted exterior, epoxy coated interior
1/4 in. carbon steel SA-285 grade C minimum

MAINTENANCE inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P1

NAME CAUSTIC STORAGE TANK METERING PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
Liquid Metronics Inc. (LMI)
19 Craig Road
Acton, MA 01720-5495
(508) 263-9800

DISTRIBUTOR
Stranco
595 Industrial Drive
P.O. Box 389, Bradley, IL 60915-0389
815-932-8154

DESCRIPTION
Model D741 Drive
35P wet end
30691 Analog to Digital Converter
115 V

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T2

NAME EQUALIZATION/AERATION TANK

LOCATION TREATMENT BUILDING

MANUFACTURER
Plas-Tanks Industries, Inc.
5011 Factory Drive
Fairfield, OH 45014
513-829-8888

DISTRIBUTOR
K-Tech Assoc.
1868 Niagara Falls Blvd., Suite 304
Niagara Falls, NY 14150
716-695-1038

DESCRIPTION
3800 gallon cap, 3000 gallon operating volume
60 minute retention time at 42 gpm
FRP-vinyl ester resin
flat bottom, dished top
8'OD, 10'SSH

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-B1

NAME EQUALIZATION/AERATION TANK BLOWER

LOCATION TREATMENT BUILDING

MANUFACTURER
EG&G ROTRON
North Street
Saugerties, NY 12477
914-246-3401

DISTRIBUTOR

DESCRIPTION
Regenerative Blower
100 cfm at 96" static H20 pressure
Model DR6D89
5HP, TEFC, 230/460V, 3Ø

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-C1

NAME EQUALIZATION/AERATION TANK
VAPOR PHASE CARBON ADSORBER

LOCATION TREATMENT BUILDING

MANUFACTURER ENCOTECH, Inc.
P.O. Box 838
Donora, PA 15033
412-379-4555

DISTRIBUTOR

DESCRIPTION 2000 lb. adsorber
100 cfm
4'OD, 7'OM
Carbon steel with epoxy interior coating and epoxy exterior finish

MAINTENANCE Replace carbon when spent

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P2

NAME EQUALIZATION/AERATION TANK TRANSFER PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
G&L Goulds Pumps
P.O. Box 330
Seneca Falls, NY 13148
315-568-2811

DISTRIBUTOR
Pump & Compressor Equipment, Inc.
570 Elk Street
Buffalo, NY 14210
716-823-1504

DESCRIPTION
Close coupled centrifugal pump
Model 3642
50 gpm at 50' head
1 1/4 x 1 1/2-5, 3500 RPM, 1 1/2 HP, 230/460 V, 3 phase

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-X1

NAME INCLINED PLATE SETTLER

LOCATION TREATMENT BUILDING

MANUFACTURER
Parkson Corp.
2727 NW 62nd Street
Ft. Lauderdale, FL 33309
305-974-6610

DISTRIBUTOR
Siewert Equipment
175 Akron Street
Rochester, NY 14609
716-482-9640

DESCRIPTION
Lamella Gravity Plate Settler
Model 125/55
125 sq. ft area
FRP plates, steel housing
13' - 8"OAH, (10' x 4' floor space)

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P11

NAME INCLINED PLATE SETTLER SLUDGE PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
Wilden Pumps
22069 Van Buren, P.O. Box 845
Colton, CA 92324
714-422-1730

DISTRIBUTOR
Glauber Equipment Corp.
3940 Broadway
Buffalo, NY 14223
716-681-1234

DESCRIPTION
Model M-1 Air Operated Diaphram Pump
Polypropylene
Flow of 10 gpm at 50' head

MAINTENANCE

COMPONENT PARTS
Wet end repair kit
Dry end repair kit

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T3

NAME ACID STORAGE TANK

LOCATION TREATMENT BUILDING

MANUFACTURER
Plas-Tanks Industries, Inc.
5011 Factory Drive
Fairfield, OH 45014
513-829-8888

DISTRIBUTOR
K-Tech Assoc.
1868 Niagara Falls Blvd., Suite 304
Niagara Falls, NY 14150
716-695-1038

DESCRIPTION
FRP-Vinyl Ester with double nexus veil
3000 gallon capacity
flat bottom dished top
7'6"OD, 10'SSH

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P4

NAME ACID METERING PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
LMI
19 Craig Road
Acton, MA 01720-5495
508-263-9800

DISTRIBUTOR
Stranco
595 Industrial Drive
P.O. Box 389, Bradley, IL 60915-0389
815-932-8156

DESCRIPTION
Model D741 (6-20 GPM)
36S wet end (TFE)
30691 analog to digital converter

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T4

NAME SURGE TANK #1

LOCATION TREATMENT BUILDING

MANUFACTURER
Plas-Tanks Industries, Inc.
5011 Factory Drive
Fairfield, OH 45014
513-829-8888

DISTRIBUTOR
K-Tech Assoc.
1868 Niagara Falls Blvd., Suite 304
Niagara Falls, NY 14150
716-695-1038

DESCRIPTION
FRP-Vinyl Ester with single nexus veil
Flat Bottom, Dished Top
2000 gallon capacity
6'OD, 10'SSH

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-X2

NAME BIOTOWER

LOCATION TREATMENT BUILDING

MANUFACTURER
US Filter Corp
Lancy Environmental Systems, Inc.
181 Thorn Hill Road
Warrendale, PA 15086
412-772-0044

DISTRIBUTOR

DESCRIPTION
Upflow, fixed film, media filled
Epoxy coated steel
20,300 gallon capacity
12'ID, 24'H

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P3

NAME BIOTOWER FEED PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
The Duriron Company, Inc.
Pump Division
Dayton, OH 45401
513-226-4000

DISTRIBUTOR
US Filter Corp.
Lancy Environmental Systems
181 Thornhill Road
Warrendale, PA 15086
412-772-0044

DESCRIPTION
Mark III, 1K 1.5 x 1-6 2RV
3HP, 230/460V, 3Ø, 3600 RPM
50 GPM at 50' head

MAINTENANCE
Inspect for leaks
Grease monthly

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T5 and SS2-M1
SS2-T6 and SS2-M2

NAME NUTRIENT ADDITION TANKS AND MIXERS

LOCATION TREATMENT BUILDING

MANUFACTURER

Chemineer, Inc.
P.O. Box 1123
Dayton, OH 45401
513-454-3200

US Filter Corp.
Lancy Environmental
181 Thornhill Road
Warrendale, PA 15086
412-772-0044

DISTRIBUTOR

Shrier Process Equipment
P.O. Box 368, 1355 Pittsford - Mendon Road
Mendon, NY 14506
716-624-4490

DESCRIPTION

FRP-2'-6"OD, 3'H - ATLAL 382 Resin
110 Gallon capacity, Open Top
Chemineer Model LTD-2 Mixer
1/4 HP, 115/230 V, 1Ø, 7800 RPM

MAINTENANCE

Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P6 and SS2-P7

NAME Nutrient Addition Metering Pumps

LOCATION TREATMENT BUILDING

MANUFACTURER
LMI
19 Craig Road
Acton MA 01720-5495
508-263-9800

DISTRIBUTOR
Stranco
595 Industrial Drive, P.O. Box 389
Bradley, IL 60915-0389
815-932-8154

DESCRIPTION
Model D741 Drive
36S Wet End
30691 Analog to Digital Converter
115 V

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T7

NAME INOCULUM ADDITION TANK

LOCATION TREATMENT BUILDING

MANUFACTURER US Filter
Lancy Environmental
181 Thornhill Road, Warrendale, PA 15086
412-772-0044

DISTRIBUTOR

DESCRIPTION FRP Tank 3'-6"OD, 3'-6"H
250 gallon capacity, open top
Atlac 382 resin

MAINTENANCE Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P5

NAME INOCULUM ADDITION METERING PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
LMI
19 Craig Road
Acton, MA 01720-5495
508-263-9800

DISTRIBUTOR
Stranco
595 Industrial Drive, P.O. Box 385
Bradley, IL 60915-0389
815-932-8154

DESCRIPTION
Model D741 Drive
365 Wet End
30691 Analog to Digital Converter
115 V

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-B2 and SS2-B3

NAME BIOTOWER BLOWERS

LOCATION TREATMENT BUILDING

MANUFACTURER Roots Dresser Industries Inc.
Connersville, IN 47331

DISTRIBUTOR US Filter
Lancy Environmental
181 Thornhill Road, Warrendale, PA 15086
412-772-0044

DESCRIPTION Universal Rotary Positive Blower
Model 53 RAI-U
170 SCFM
15HP, 460V, 3Ø TEFC

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P12

NAME BIOTOWER SLUDGE PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
Wilden Pumps
22069 Van Buren
P.O. Box 845
Colton, CA 92324

DISTRIBUTOR
Glauber Equipment Corp.
3940 Broadway
Buffalo, NY 14227
716-681-1234

DESCRIPTION
Model M-2
Air Operated Diaphragm Pump
Aluminum
Flow 30 GPM at 50' head

MAINTENANCE

COMPONENT PARTS
Wet end repair kit
Dry end repair kit

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P8

NAME BIOTOWER RECIRCULATION PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
The Duriron Company, Inc.
Pump Division
Dayton, OH 45401
513-226-4000

DISTRIBUTOR
US Filter Corp.
Lancy Environmental Systems
181 Thornhill Road
Warrendale, PA 15086
412-772-0044

DESCRIPTION
Mark III, 1K 1.5 x 1-6 2RV
3HP, 230/460V, 3Ø, 3600 RPM
50 GPM at 50' head

MAINTENANCE
Inspect for leaks
Grease monthly

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-C2

NAME BIOTOWER VAPOR PHASE CARBON ADSORBER

LOCATION TREATMENT BUILDING

MANUFACTURER
ENCOTECH, Inc.
P.O. Box 838
Donora, PA 15033
412-379-4555

DISTRIBUTOR

DESCRIPTION
2000 lb. adsorber
100 cfm
4'OD, 7'OD
Carbon steel with epoxy interior coating and epoxy exterior finish

MAINTENANCE
Replace carbon when spent

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-X3

NAME SAND FILTER

LOCATION TREATMENT BUILDING

MANUFACTURER
Parkson Corp.
2727 NW 62nd Street
Ft. Lauderdale, FL 33309
305-974-6610

DISTRIBUTOR
Siewert Equipment
175 Akron Street
Rochester, NY 14609
716-482-9640

DESCRIPTION
Dynasand Filter Model DSF-12
Continuous Backwash, Upflow
12 sq. ft. filtration area
4'ID, 12'H
Maximum head loss 30" water pressure

MAINTENANCE
Inspect for leaks
Clean as necessary

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T8

NAME SURGE TANK #2

LOCATION TREATMENT BUILDING

MANUFACTURER
Nalgene Industrial Products Group
Nalge Company, P.O. Box 20365
Rochester, NY 14602
716-586-8800

DISTRIBUTOR
Korus Equipment Company
P.O. Box 631
Buffalo, NY 14226
716-839-1908

DESCRIPTION
Model 51109-1100
1100 gallon HDPE
Flat Bottom, Dished Top
64"OD, 93"H

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO.	SS2-P9 and SS2-P10
NAME	SURGE TANK TRANSFER PUMPS
LOCATION	TREATMENT BUILDING
MANUFACTURER	G&L Goulds Pumps P.O. Box 330 Seneca Falls, NY 13148 315-568-2811
DISTRIBUTOR	Pump & Compressor Equipment, Inc. 570 Elk Street Buffalo, NY 14210 716-823-1504
DESCRIPTION	Close coupled Centrifugal Pump Model 3642 50 GPM at 50' head each 1 1/4 x 1 1/2-5, 3500 RPM, 1 1/2 HP, 230/460 V 3 phase
MAINTENANCE	Inspect for leaks
COMPONENT PARTS	
SPARE PARTS	

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO.	SS2-X4 and SS2-X5
NAME	LIQUID PHASE CARBON ADSORBERS
LOCATION	TREATMENT BUILDING
MANUFACTURER	Encotech Inc. P.O. Box 838 Donora, PA 15033 412-379-4555
DISTRIBUTOR	
DESCRIPTION	2-20,000 lb adsorbers for a 1 train x 2 stage system Skid Mounted 10'OD, 10'H each vessel, ASME code, 75 PSIG design 28'L, 13'W, 21'H Piping and valves
MAINTENANCE	Replace carbon upon breakthrough
COMPONENT PARTS	
SPARE PARTS	

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T10

NAME SURGE TANK #3

LOCATION TREATMENT BUILDING

MANUFACTURER
Nalgene Industrial Products Group
Nalge Company, P.O. Box 20365
Rochester, NY 14602
716-586-8800

DISTRIBUTOR
Korus Equipment Company
P.O. Box 631
Buffalo, NY 14226
716-839-1908

DESCRIPTION
Model 51109-1100
1100 gallon HDPE
Flat Bottom, Dished Top
64"OD, 93"H

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P15

NAME BYPASS PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
G&L Goulds Pumps
P.O. Box 330
Seneca Falls, NY 13148
315-568-2811

DISTRIBUTOR
Pump & Compressor Equipment, Inc.
570 Elk Street
Buffalo, NY 14210
716-823-1504

DESCRIPTION
Close coupled Centrifugal Pump
Model 3642
50 GPM at 50' head each
1 1/4 x 1 1/2-5, 3500 RPM, 1 1/2 HP, 230/460 V
3 phase

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO.	SS2-T9
NAME	SLUDGE HANDLING TANK
LOCATION	TREATMENT BUILDING
MANUFACTURER	Nalgene Industrial Products Group Nalge Company, P.O. Box 20365 Rochester, NY 14602 716-586-8800
DISTRIBUTOR	Korus Equipment Company P.O. Box 631 Buffalo, NY 14226 716-839-1908
DESCRIPTION	4200 gallon capacity XLPE cone bottom, dished top 96"OD, 137"SSH, 177"OAH Model 53309-4200 tank 53009-4200 stand
MAINTENANCE	Inspect for leaks
COMPONENT PARTS	
SPARE PARTS	

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P13

NAME SLUDGE DEWATERING PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER Moyno

DISTRIBUTOR Resi-Tech Inc.
7927 US Highway 24
Manhattan, KS 66502
913-776-8383

DESCRIPTION Moyno Progressive Cavity Pump
Model 367
Part of sludge dewatering system

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-X6

NAME DEWATERING BAG FILTER

LOCATION TREATMENT BUILDING

DISTRIBUTOR
Resi-Tech Inc.
7927 US Highway 24
Manhattan, KS 66502
913-776-8383

DISTRIBUTOR
J. Andrew Lange, Inc.
4455 Genesee Street
Syracuse, NY
716-839-2225

DESCRIPTION
Model 6 BCA
6 bag dewatering system
9'W, 12'L, 6'H
includes pump (P13) and polymer addition system

MAINTENANCE

COMPONENT PARTS
Draimad dewatering bags
Bag wire ties

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-T11

NAME SUMP

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-P14

NAME SUMP PUMP

LOCATION TREATMENT BUILDING

MANUFACTURER
G&L Goulds Pumps
P.O. Box 330
Seneca Falls, New York 13148
315-568-2811

DISTRIBUTOR
Pump & Compressor Equipment Inc.
570 Elk St.
Buffalo, New York 14210
716-823-1504

DESCRIPTION
Clone coupled Self Priming Pump
Model XSH07
Size 1 1/4 x 1 1/2
60 HZ, 3500 RPM, 115/230V, 3/4 HP
28 gpm at 20' suction head

MAINTENANCE
Inspect for leaks

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-X7

NAME AIR COMPRESSOR

LOCATION TREATMENT BUILDING

MANUFACTURER QUINCY

DISTRIBUTOR
Scales Air Compressor
28 Parker Street
Wallingford, CT 06492
203-288-3181

DESCRIPTION
Model QEH-15, 2 Stage Air Compressor
60 CFM at 100 PSI
120 gallon tank
15 HP, 230V, 3Ø, TEFC
Automatic drain, pressure switch

MAINTENANCE
Check oil weekly
Change oil twice annually

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-G1

NAME MAGNEHELIC AIR PRESSURE GAUGES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Dwyer series 2000
magnehelic pressure gauge

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-G2

NAME WATER PRESSURE GAUGES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Duragauge pressure gauge 1279/1379

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-V1

NAME PVC BALL VALVES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Hayward, 0.75-inch, 1-inch, 2-inch, and 3-inch

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-V2

NAME BRONZE BALL VALVES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Apollo, 1-inch (70-105), 2-inch (70-108), 3-inch (70-100)

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-V3

NAME STAINLESS STEEL BALL VALVES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Worcester, 2-inch and 3-inch,

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-V4

NAME REGULATING GLOBE VALVES

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 2-inch and 3-inch.

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-S1

NAME LIQUID LEVEL SENSORS AND TRANSMITTERS

LOCATION TREATMENT BUILDING

MANUFACTURER
Drexelbrook Engineering Company
205 Keith Valley Rd.
Horsham, PA 19014
215-674-1234

DISTRIBUTOR
Ritec Inc.
204 West Fall Road
Rochester, New York 14260
716-271-3170

DESCRIPTION
Drexelbrook
LT 109 Model C508-25-30-RUHE
LT 120 Model C508-25-30-RUHE
LT 142 Model C508-25-30-RUHE
LT 162 Model C508-25-9-RUHE
LT 165 Model C508-25-31-RUHE

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS2-S2

NAME ELECTROCHEMICAL SENSORS AND TRANSMITTERS

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Foxboro 871A series sensors and 870 series transmitters

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

TABLE OF CONTENTS

TREATED WATER DISCHARGE SUBSYSTEM - SS3

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS3-X1

NAME Gravity Drain Pipe

LOCATION

MANUFACTURER

DISTRIBUTOR

DESCRIPTION 6-inch diameter, HDPE

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

TABLE OF CONTENTS

BUILDING SUBSYSTEM - SS4

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS4-X1

NAME SIDEWALL EXHAUST FANS

LOCATION TREATMENT BUILDING

MANUFACTURER Greenheck

DISTRIBUTOR

DESCRIPTION Greenheck sidewall exhaust fans,
model SDE-10-32-D, 1/25 hp;
model SDE-20-24-B, 1/4 hp; and
model SDE-12-24-A, 1/4 hp.

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS4-X2

NAME ROOFTOP EXHAUST FANS

LOCATION TREATMENT BUILDING

MANUFACTURER Greenheck

DISTRIBUTOR

DESCRIPTION Greenheck rooftop exhaust fans,
model GB 70-4, R-4, 1/4 hp;
model GB 70-4, R-5, 1/4 hp; and
model GB 240-7, R-5, 3/4 hp.

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS4-X3

NAME ROOF HEAT PUMP UNITS

LOCATION TREATMENT BUILDING

MANUFACTURER Carrier

DISTRIBUTOR

DESCRIPTION Carrier single-package rooftop heat pump units, model 50QJ004-6

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS4-X4

NAME FORK LIFT TRUCK

LOCATION

MANUFACTURER

DISTRIBUTOR

DESCRIPTION

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS4-X5

NAME SECURITY SYSTEM

LOCATION TREATMENT BUILDING

MANUFACTURER

DISTRIBUTOR

DESCRIPTION

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

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SITE COVER SUBSYSTEM - SS7

EQUIPMENT SPECIFICATION FORM

SUMMIT NATIONAL SITE

EQUIPMENT NO. SS7-X1

NAME Security Fence

LOCATION

MANUFACTURER

DISTRIBUTOR

DESCRIPTION Chain-link, 8 feet high

MAINTENANCE

COMPONENT PARTS

SPARE PARTS

SECTION 7

7.0 MAINTENANCE

TABLE OF CONTENTS

LIST OF FIGURES

ACTIVITY / FREQUENCY	DAILY	WEEKLY	MONTHLY	SEMI-ANNUALLY	COMMENTS
INSPECT TREATMENT PLANT EQUIPMENT	*				
INSPECT PUMP CHAMBER LOCATIONS	*				
INSPECT SECURITY FENCES	*				
INSPECT SITE BUILDINGS	*				
INSPECT SITE PERIMETER DRAINAGE	*				
COMPLETE MAINTENANCE RECORDS	*				
INSPECT PROCESS TANKS		*			
INSPECT PROCESS PUMPS		*			
INSPECT AIR COMPRESSOR		*			
INSPECT BLOWERS		*			
CHECK CHEMICAL TANK LEVELS		*			
CHECK OIL LEVELS IN OILERS		*			
INSPECT SAND FILTER		*			
INSPECT SLUDGE HANDLING EQUIPMENT		*			
INSPECT WELL CHAMBERS AND MANHOLES		*			
CHECK FLOW RATES		*			
INSPECT SITE SAFETY EQUIPMENT		*			
INSPECT COVER, AND DRAINAGE SYSTEMS			*		MAINTAIN GRASS HEIGHT BETWEEN 4"-8"
FIRE EXTINGUISHERS			*		
EXHAUST FANS			*		
LADDERS			*		
FORK TRUCK			*		
LIGHTING			*		
OVERHEAD DOORS			*		
SMOKE ALARMS			*		
POWER CORDS			*		
SUMP PIT GRATING			*		
SANITARY HOLDING TANK			*		
BLOWERS			*		
GREASE BLOWER BEARINGS				*	
GREASE PUMP MOTORS				*	
WIRE BRUSH CORROSION ON TANKS AND TOUCH-UP PAINT				*	
INSPECT CARBON BEDS				*	
INSPECT ACID TANK				*	
INSPECT CONTROL VALVES				*	
INSPECT CAUSTIC TANK				*	
INSPECT AIR LINES				*	
INSPECT CONTROL VALVES				*	

figure 7.1
MAINTENANCE SCHEDULE
Summit National Superfund Site

CRA

7.0 MAINTENANCE

Maintenance requirements for the Site subsystems include routine inspection, scheduled maintenance, unscheduled maintenance, and record keeping of these activities. The daily, weekly, monthly and semi-annual inspections are detailed in Section 7.1. It should be noted that additional maintenance details are provided in the manufacturers' maintenance information as presented in the various manuals on file in the Site office. The procedures for implementing unscheduled maintenance are discussed in Section 7.2.

Maintenance activities which involve confined space entry must be conducted in accordance with the confined space entry procedures described in Section 10.16 of the Site Health and Safety Plan (Section 10).

7.1 ROUTINE INSPECTION AND MAINTENANCE

7.1.1 Scheduled Maintenance

Scheduled maintenance should be performed according to a predetermined schedule. An outline of the scheduled maintenance work which should be performed is summarized on Figure 7.1.

DATE: _____ INSPECTED BY: _____

LOCATION	CHECKED	COMMENTS
EXTRACTION WELLS		
WET WELL		
MANHOLES		
COVER		
SECURITY FENCE		
PERIMETER DRAINAGE		
TREATMENT BUILDING		
TRAILER UNLOADING AREA		
TREATMENT EQUIPMENT		

figure 7.2

DAILY INSPECTION LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

Scheduled maintenance should be performed following completion of the daily inspection, according to the maintenance schedule outlined on Figure 7.1. The maintenance work performed should be recorded on an Equipment Maintenance Record Log form for the respective item upon which maintenance is performed. Separate Equipment Maintenance Record Log forms must be maintained for each piece equipment item identified in Section 6, and all must be filed with the respective equipment files in the Site office. Figure 7.3 presents a typical Maintenance Record Log.

7.1.3 Weekly Inspection and Maintenance

Routine weekly inspection and maintenance should be performed as summarized on Figure 7.1 and will include a review of the weekly safety inspection list provided in Appendix 10.1 of the Site Health and Safety Plan (Section 10).

Weekly inspection and maintenance of the treatment system will include:

i) checking nutrient supplies to anticipate need for new batch, or reorder;
ii) checking acid and caustic levels to anticipate reorder point;
iii) checking supply of dewatering bags to anticipate reorder point;
iv) scheduling pick up of full sludge bags;
v) verifying operation of motors on blowers, pumps and the compressor;
vi) checking supply of sampling and analysis equipment for lab;
vii) checking supply of safety equipment, and tools; and

EQUIPMENT NO. _____ NAME _____

DATE OF REPAIR	SPARE PARTS USED		DESCRIPTION OF REPAIR
	DESCRIPTION	PART NO.	

figure 7.3

MAINTENANCE RECORD LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

viii) checking operation of biotower to verify need for pumping.

A Weekly Equipment Inspection Log is provided on Figure 7.4.

The weekly inspection and maintenance of the pump chambers and manholes should include, but not necessarily be limited to, the following:

i) inspecting locks and covers for signs of forced entry;

ii) lubricating cover hinges;

iii) inspecting pump chambers for water. As necessary, pump out the water and record the volume. Water removed must be transferred the to equalization/aeration tank unit (T2) for treatment;

iv) checking and recording total VOC HNu meter reading within all pump chambers and manholes;

v) completing the Pump Chamber Entry Permit, as illustrated on Figure 7.5, prior to entering any well chamber or manhole;

vi) checking for unusual knocks or vibrations from the pumps while in operation. The Grundfos stainless-steel pumps are essentially maintenance free;

vii) inspecting pipes and valves for signs of leakage. The control valves are essentially maintenance free; and

viii) checking the flow meter to ensure that it is working and record the instantaneous flow rate from the meter in the pump chamber. If the flow rate recorded is different from the desired flow rate, adjust the flow transmitter to obtain the desired flow rate.

DATE: _____ INSPECTED BY: _____

TANKS	CK	COMMENTS
T-1 CAUSTIC STORAGE		
T-2 EQUALIZATION/ AERATION		
T-3 ACID STORAGE		
T-4 SURGE TANK No.1		
T-5 NUTRIENT		
T-6 NUTRIENT		
T-7 INOCULUM		
T-8 SURGE TANK No.2		
T-9 SLUDGE HANDLING		
T-10 SURGE TANK No.3		

UNITS	CK	COMMENTS
X1 SETTLER		
X2 BIOTOWER		
X3 SAND FILTER		
X4 AERATION CARBON		
X5 BIOTOWER CARBON		
X6 SLUDGE DEWATER.		
X7 AIR COMPRESSOR		
CONTROL VALVES		

PUMPS	CK	COMMENTS
P-1 CAUSTIC METERING		
P-2 EQUAL./AERATION		
P-3 BIOTOWER		
P-4 ACID METERING		
P-5 INOCULUM		
P-6 NUTRIENT		
P-7 NUTRIENT		
P-8 BIOTOWER RECIRC.		
P-9 SURGE TANK No.2		
P-10 SURGE TANK No.2		
P-11 SETTLER SLUDGE		
P-12 BIOTOWER SLUDGE		
P-13 SLUDGE DEWATER.		
P-14 SUMP PUMP		
P-15 SURGE TANK No.3		

BLOWERS	CK	COMMENTS
B1 AERATION BLOWER		
B2 BIOTOWER BLOWER		
B3 BIOTOWER BLOWER		

figure 7.4

WEEKLY EQUIPMENT INSPECTION LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD, OHIO

MONTH: _____

PUMP CHAMBER: _____

Entry Date: __/__/__
Entry Time: _____ A.M./P.M.

Purpose of Entry: _____

_____

_____

Before Entry:

1) Hnu Reading _____ ppm _____ initials
(Must be less than 5 ppm or forced air ventilation required.)

2) Oxygen Meter Reading _____ % _____ initials
(Must be greater than 19.5% or forced air ventilation required.)

3) Is forced air blower required? ____ Yes ____ No

Repair/Inspection Completed Time _____ A.M./P.M.

_____
Name - Personnel Entering Chamber

_____
Name - Personnel Entering Chamber

_____
Name - Supervisor

figure 7.5

PUMP CHAMBER ENTRY PERMIT
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

The inspection work performed should be recorded on the Well Chamber and Manhole Inspection Log for each well chamber and manhole. Figure 7.6 presents a Weekly Well Chamber and Manhole Inspection Log. Maintenance performed should be recorded on the Equipment Maintenance Record Log shown on Figure 7.3. Completed logs are filed on a weekly basis with the previous inspection records, maintained in the Site.

7.1.4 Monthly Inspection and Maintenance

Routine monthly inspection and maintenance to be performed as summarized on Figure 7.1, and will include a review of the monthly safety inspection list provided in Appendix 10.1 of the Site Health and Safety Plan (Section 10), and inspecting the Site cover.

7.1.4.1 Maintenance and Inspection of the Site Cover

The vegetative cover will be maintained at a nominal height of four to eight inches, to promote active vegetative growth and minimize vegetative distress. Maintaining the vegetative cover at this height typically requires mowing three to four times per year, and fertilizing once or twice per year.

DATE: _____ INSPECTED BY: _____

WELL	INSPC. BY	LOCKS HINGES COVERS	CHAMBER WATER LEVEL	PUMP OPERATING	PIPES, VALVES	METER FLOW RATE	COMMENTS
WW							
EW-1							
EW-2							
EW-3							
EW-4							
EW-5							
EW-6							
MH-1							
MH-2							
MH-3							
MH-4							
MH-5							
MH-6							
MH-7							
MH-8							

figure 7.6

WEEKLY WELL CHAMBER AND MANHOLE INSPECTION LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

The Site cover will be visually inspected on a monthly basis by walking the entire Site to determine the presence of burrowing animals, deep rooted vegetation, vegetative distress, surface erosion, ponding of water, and subsidence or settlement. During the inspection, the perimeter security fence also will be inspected to determine structural damage or loss of integrity. All gates will be opened to ensure functionality and all locks will be oiled.

Significant problems identified by the periodic inspections will be rectified within one month of their observance, except for items where implementation of repairs are seasonally dependent. In such cases, problems will be substantially rectified by the next season when such repairs are typically performed. Deep rooted vegetation and vegetative distress shall be controlled by application of appropriate growth inhibiters, and reseeding and fertilizing, respectively. Areas where surface erosion, desiccationg of water and subsidence or settlement have occurred shall be reworked, restored to design final contours and revegetated.

The monthly Site cover inspection should be recorded on the Monthly Site Cover Inspection Log presented on Figure 7.7. Completed logs are filed in the Site Office. As necessary, unscheduled maintenance should be performed, or scheduled for completion as soon as possible.

ITEM	TYPES OF PROBLEMS	CHECKED	OBSERVATIONS	WORK ORDER NUMBER	DATE AND NATURE OF REPAIRS/ REMEDIAL ACTION
SECURITY					
PERIMETER FENCE	- CORROSION OR STRUCTURAL DAMSGE TO SUPPORT POSTS AND FENCE FABRIC				
GATES AND LOCK	- CORRISION DAMAGE TO GATE HINGES AND FABRIC - LOCKS STICKING OR CORRODING				
SIGNS	- CORROSION, VISIBILITY, DAMAGE				
SITE COVER					
LANDSCAPED AREA	- VEGETATIVE COVER - PRESENCE OF DEEP ROOTED VEGETATION OR BURROWING MAMMALS - EROSION, CRACKING - SUBSIDENCE (VISUAL) - SETTLEMENT - PONDING OF WATER - SLUMPING - SEEPAGE - MOW GRASS - FERTILIZE COVER - SAMPLE TOPSOIL				
DRAINAGE SYSTEM	- HEAVING, SETTLEMENT, CRACKING OF REINFORCED CONCRETE CHANNEL - EROSION, PROFILE, VEGETATION OF DRAINAGE CHANNELS - SLUMPING OF SIDES - VEGETATION CONTROL				

figure 7.7

MONTHLY SITE COVER INSPECTION LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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7.1.5 Semi-Annual Inspection and Maintenance

Routine semi-annual inspection and maintenance includes a review of the semi-annual safety inspection list provided in Appendix 10.1 of the Site Health and Safety Plan (Section 10) and equipment maintenance including greasing motors and blower bearings, inspection of carbon beds, touching up tanks, and inspection of acid and caustic storage tanks, air lines, and control valves.

The equipment inspections and maintenance performed should be recorded on the Semi-Annual Inspection Log presented on Figure 7.8. Completed logs are filed in the Site office. As necessary, unscheduled maintenance should be performed, or scheduled for completion as soon as possible.

7.2 UNSCHEDULED MAINTENANCE

Unscheduled maintenance must be performed as required. Unscheduled maintenance items identified by the daily, weekly, monthly and semi-annual inspection activities may include the following:

i) cutting and/or fertilizing of the Site grass;

ii) grading of the Site access roads;

iii) cleaning of the stormwater catchbasins, culverts, and/or sewer mains.

iv) repair surficial erosion and sloughing along the cap boundary slopes;

DATE: _____ INSPECTED BY: _____

	CHECKED	COMMENTS
GREASE MOTORS		
GREASE BLOWER BEARINGS		
INSPECT ACID TANK		
INSPECT CAUSTIC TANK		
CARBON BEDS		
TOUCH UP TANKS		
INSPECT AIR LINES		
INSPECT CONTROL VALVES		

figure 7.8

SEMI-ANNUAL INSPECTION LOG
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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v) repair damage caused by burrowing wildlife, the presence of deep-rooted weeds, or other foreign vegetation;

vi) redevelopment of extraction wells;

vii) rebuilding extraction well pumps;

viii) clean out of the biotower;

ix) clean out of the settler; and

x) replacement of GAC units (C1 and C2).

8.0 MONITORING

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ACTIVITIES	MONTHS (YEAR 1)													MONTHS (QUARTERS – YEARS 2 TO 5)														AFTER 5th YEAR
	START UP	1	2	3	4	5	6	7	8	9	10	11	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60	
CONSERT DECREE REQUIRMENTS																														
GROUNDWATER HYDRAULIC MONITORING (1)	S	2✱	2✱	2✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	QUARTERLY MONITORING
GROUNDWATER SAMPLING																														
– SITE COVER SOUTHEAST DRAINAGE DITCH (TCL PARAMETER LIST)	S												✱				✱				✱				✱				✱	ANNUALLY
– WTU AND IU MONITORING AND EXTRACTION WELLS																														
I) SSIRL PARAMETER LIST															✱		✱		✱		✱		✱		✱		✱			SSIRL ANNUALLY
II) TCL PARAMETER LIST	S						✱						✱																✱	TCL EVERY 5th YEAR
– UPPER SHARON MONITORING WELLS																														
I) SSIRL PARAMETER LIST																	✱				✱				✱				✱	SSIRL BI-ANNUALLY
II) TCL PARAMETER LIST	S												✱																✱	TCL EVERY 5th YEAR
– RESIDENTIAL WELLS																														
I) SSIRL PARAMETER LIST																	✱								✱					BI-ANNUALLY
II) TCL PARAMETER LIST	S												✱																	
GROUNDWATER MONITORING REPORT													✱				✱				✱				✱				✱	REPORT ANNUALLY
TREATMENT SYSTEM EFFLUENT SAMPLING (2)																														
– PRIORITY POLLUTANT VOLATILE ORGANICS (EPA METHODS 601,602)		2▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲									MONTHLY SAMPLING								MONTHLY
– PRIORITY POLLUTANT ORGANICS (EPA METHODS 624, 625, 608)		2▲	2✱	2✱	2✱	2✱	2✱	2✱	2✱	2✱	2✱	2✱	2✱									MONTHLY SAMPLING								MONTHLY
– PRIORITY POLLUTANT HEAVY METALS (ATOMIC ADSORPTION GRAPHITE FURNACE)		▲	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	QUARTERLY
TREATMENT SYSTEM CARBON ADSORBENT AIR VENTS (EPA 624)	S												✱				✱				✱				✱				✱	ANNUALLY
TREATMENT UNIT EVALUATIONS																														
– TREATMENT SYSTEM INFLUENT (VOC's, BNA's, METALS)		✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱								MONTHLY SAMPLING								MONTHLY
METALS AND SOLIDS REMOVAL EVALUATION																														
– INFLUENT TO T1 AND BEFORE CAUSTIC ADDITION (Fe, Co, Mg, TSS)		✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱								MONTHLY SAMPLING								MONTHLY
– EFFLUENT FROM P11 AND BEFORE ACID ADDITION (Fe, Co, Mg, TSS)		✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱								MONTHLY SAMPLING								MONTHLY
BIOTOWER EVALUATION																														
– BIOTOWER, NORMAL OPERATION AND START UP																														
I) MICROBIAL COUNT, COD PH, DISSOLVED OXYGEN		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲								WEEKLY SAMPLING								WEEKLY
II) NITROGEN PHOSPHORUS		✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱								MONTHLY SAMPLING								MONTHLY
III) FE (SOLUABLE)		✱			✱			✱			✱			✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	QUARTERLY
– INOCULUM TANK/BIOTOWER START UP ONLY (MICROBIAL COUNT)	BATCH SAMPLES																													
DEWATERED SLUDGE (TCLP)		▲	▲				✱						✱		✱		✱		✱		✱		✱		✱		✱		✱	SEMI-ANNUALLY
POTABLE WATER SUPPLY WELL																														
– TCL PARAMETER LIST	S												✱				✱				✱				✱				✱	ANNUALLY

LEGEND

▲	ONCE PER WEEK	S	START UP
2▲	TWICE PER WEEK	TCL	TARGET COMPOUND PARAMETER LIST
✱	ONCE PER MONTH	SSIRL	SITE SPECIFIC INDICATOR PARAMETER LIST
2✱	TWICE PER MONTH	WTU	WATER TABLE UNIT
		IU	INTERMEDIATE UNIT

NOTES:

(1) AFTER ANY SIGNIFICANT ADJUSTMENT TO THE GROUNDWATER EXTRACTION SYSTEM, THE FREQUENCY OF HYDRAULIC MONITORING SHALL BE BI-WEEKLY FOR THREE MONTHS.

(2) IN THE EVENT THAT CONTAMINANT LEVEL IN THE EFFLUENT EXCEED THE FINAL EFFLUENT REQUIREMENT, REFER TO SECTION 8.1.3.2.1 OPERATION, MAINTENANCE AND MONITORING FOR MONITORING SCHEDULE REQUIREMENTS.

figure 8.1

MASTER MONITORING SCHEDULE
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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8.0 MONITORING

Regular monitoring at the Site, including specific sample collection, sample analyses, and reporting tasks must be completed in order to meet the following monitoring requirements:

i) Site cover monitoring, groundwater monitoring and groundwater treatment system monitoring requirements as specified in Appendices B, C, and D of the Statement of Work, Appendix B of the Consent Decree dated June 11, 1991;

ii) additional groundwater treatment system performance monitoring used to evaluate the operation of specific groundwater treatment system unit operations; and

iii) on-Site potable water supply well monitoring to demonstrate that the potable water supply to the groundwater treatment building is not contaminated.

Figure 8.1 presents a summary of the various monitoring tasks and a master schedule for the timely performance of the tasks.

Specific monitoring and analyses procedures are stipulated in the Quality Assurance Project Plan detailed in Section 12, and are supplemented by the procedures and background information presented in the following sections.

8.1 CONSENT DECREE MONITORING REQUIREMENTS

8.1.1 Site Cover Monitoring

A surface water and sediment sample shall be collected annually at the southeast corner of the Site at the confluence of the south and east drainage ditches and analyzed for the TCL organic parameter list until termination of groundwater extraction and treatment as detailed in Section 9.0.

8.1.2 Groundwater Monitoring Program

A groundwater monitoring program shall be established and maintained during the operation of and for five years after the termination of groundwater extraction and treatment for the Site. The objective of this monitoring program shall be to provide data for:

i) the demonstration of hydraulic containment, collection and extraction of Site-related contaminated groundwater in the Water Table Unit (WTU) and the Intermediate Unit (IU);

ii) the demonstration of reduction of the concentrations of Site-related contaminants in groundwater within the WTU and the IU to concentrations specified by the cleanup standards;

iii) the hydraulic and water quality characteristics in groundwater within the Upper Sharon Unit to demonstrate that groundwater within the Upper Sharon Unit is not significantly impacted by the Site; and

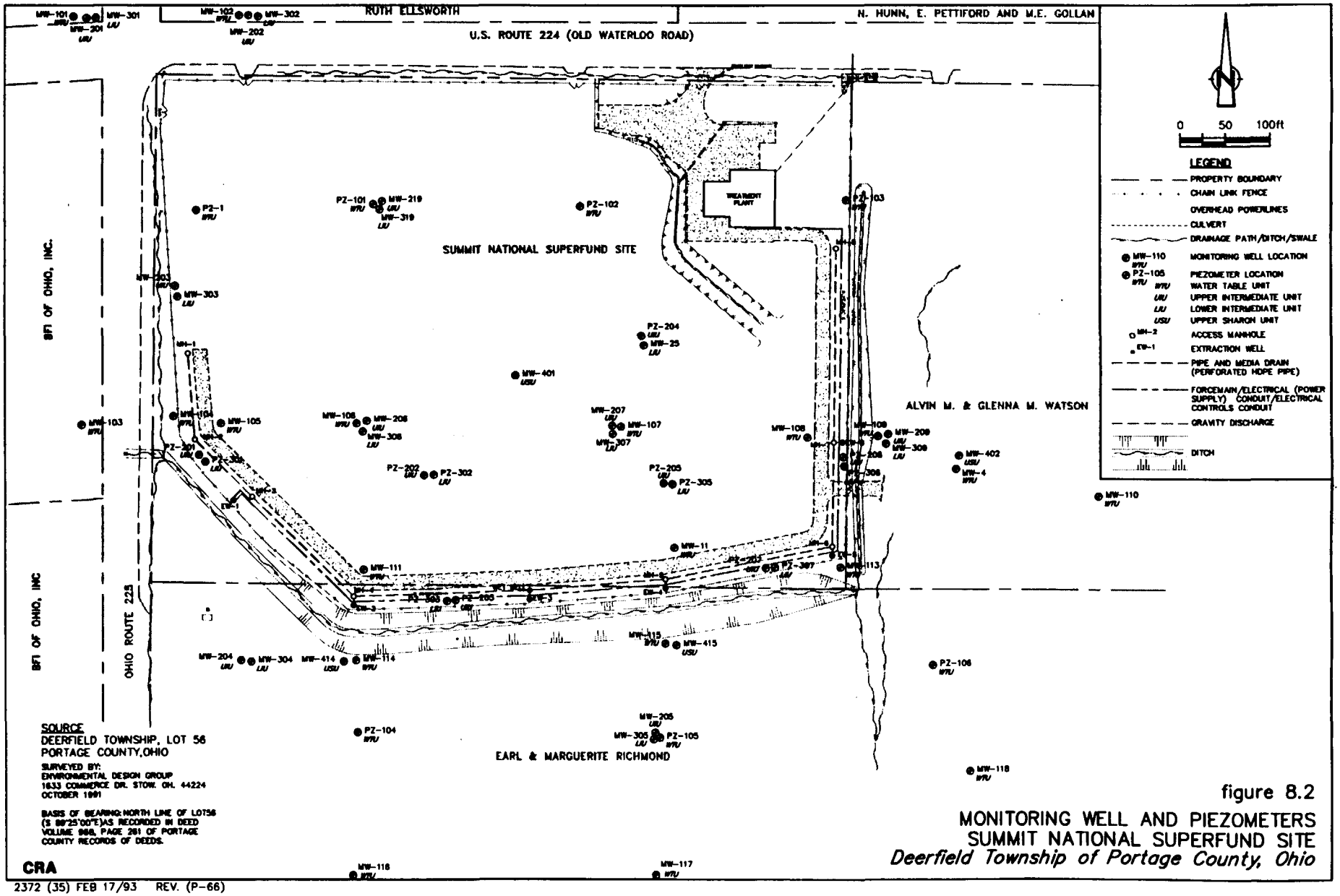

figure 8.2

MONITORING WELL AND PIEZOMETERS
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

2372 (35) FEB 17/93 REV. (P-66)

iv) the demonstration that water quality characteristics in local residential wells are not impacted by the Site.

The groundwater monitoring program shall consist of hydraulic monitoring and groundwater quality monitoring in the WTU, IU, the Upper Sharon Unit and residential wells. The evaluation of the data collected will determine if the groundwater collection and extraction system is performing to its design criteria. The data shall be used to assess whether the contingency measures as outlined in Section 8.1.2.5 require implementation. The data also shall be used to determine at what point in time operation of the WTU and IU extraction systems may cease as discussed in Section 9.

8.1.2.1 Monitoring Well Network

8.1.2.1.1 Water Table Unit (WTU)

Nineteen monitoring wells and seven piezometers have been installed in the WTU to, in part, monitor the performance of the pipe and media drain groundwater collection system. The WTU monitoring well and piezometer locations are shown on Figure 8.2. A schematic diagram of a typical WTU monitoring well is illustrated on Figure 8.3, and copies of the WTU well and piezometer installation logs are included in Attachment 8.1.

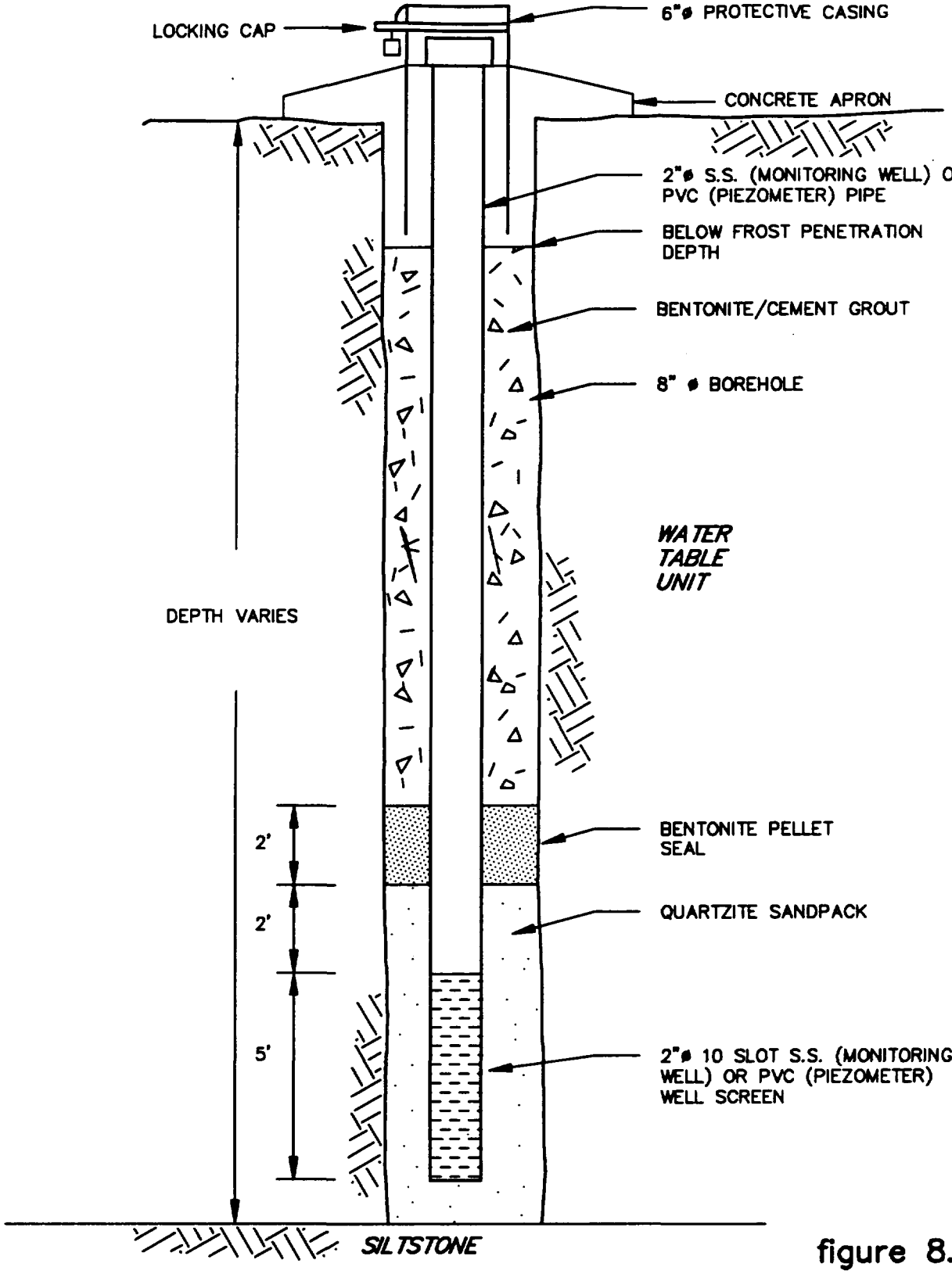

figure 8.3

TYPICAL WATER TABLE UNIT
PIEZOMETER OR MONITORING WELL
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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2372 (35) OCT 29/92 REV.1 (D-26)

8.1.2.1.2 Intermediate Unit (IU)

Nine nested monitoring wells, six nested piezometers, one monitoring well and one piezometer are installed in the IU at the locations shown on Figure 8.2. At each monitoring well and piezometer location, one well/piezometer is completed in each of the upper intermediate unit (UIU) and lower intermediate unit (LIU). Typical IU monitoring wells and piezometers are shown on Figures 8.4 and 8.5. Well and piezometer installation logs are included in Appendix 8.1.

8.1.2.1.3 Upper Sharon Unit

Four USU monitoring wells have been installed at the Site to form the Upper Sharon Unit groundwater monitoring network, as illustrated on Figure 8.2. In addition, the potable water supply well may be used to monitor the groundwater in the USU. A typical Upper Sharon monitoring well is illustrated on Figure 8.6. Monitoring of the Upper Sharon Unit is needed to demonstrate that Site-related contaminated groundwater does not significantly impact the Upper Sharon Aquifer. Well installation logs are included in Appendix 8.1.

8.1.2.1.4 Residential Wells

USEPA and OEPA selected three residential wells to be included in the monitoring well network as required by the Consent Decree.

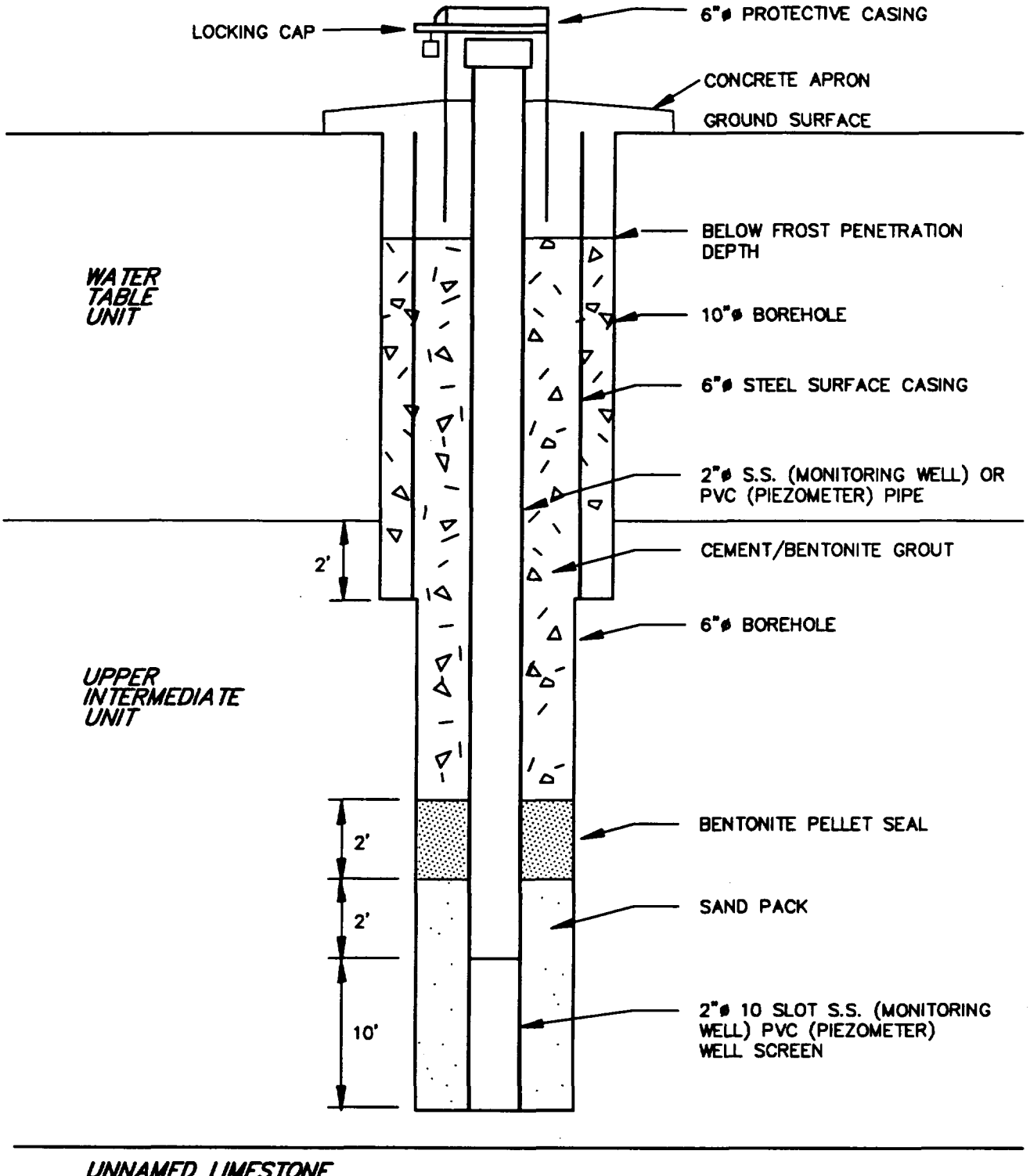

figure 8.4

TYPICAL UPPER INTERMEDIATE UNIT
PIEZOMETER OR MONITORING WELL
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

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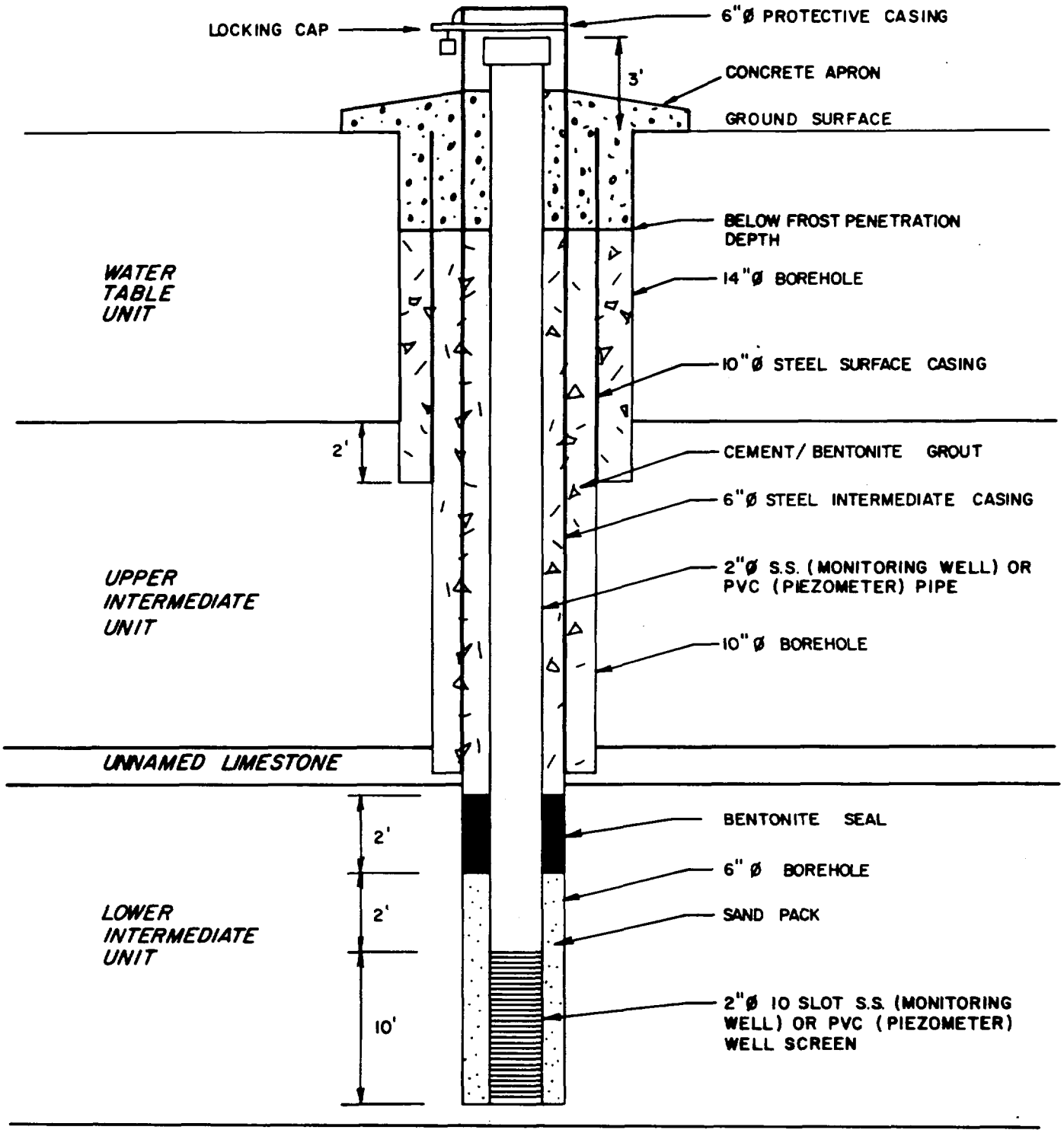

figure 8.5

TYPICAL LOWER INTERMEDIATE UNIT
PIEZOMETER OR MONITORING WELL
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

2372(35)-OCT.29/92-REV.1

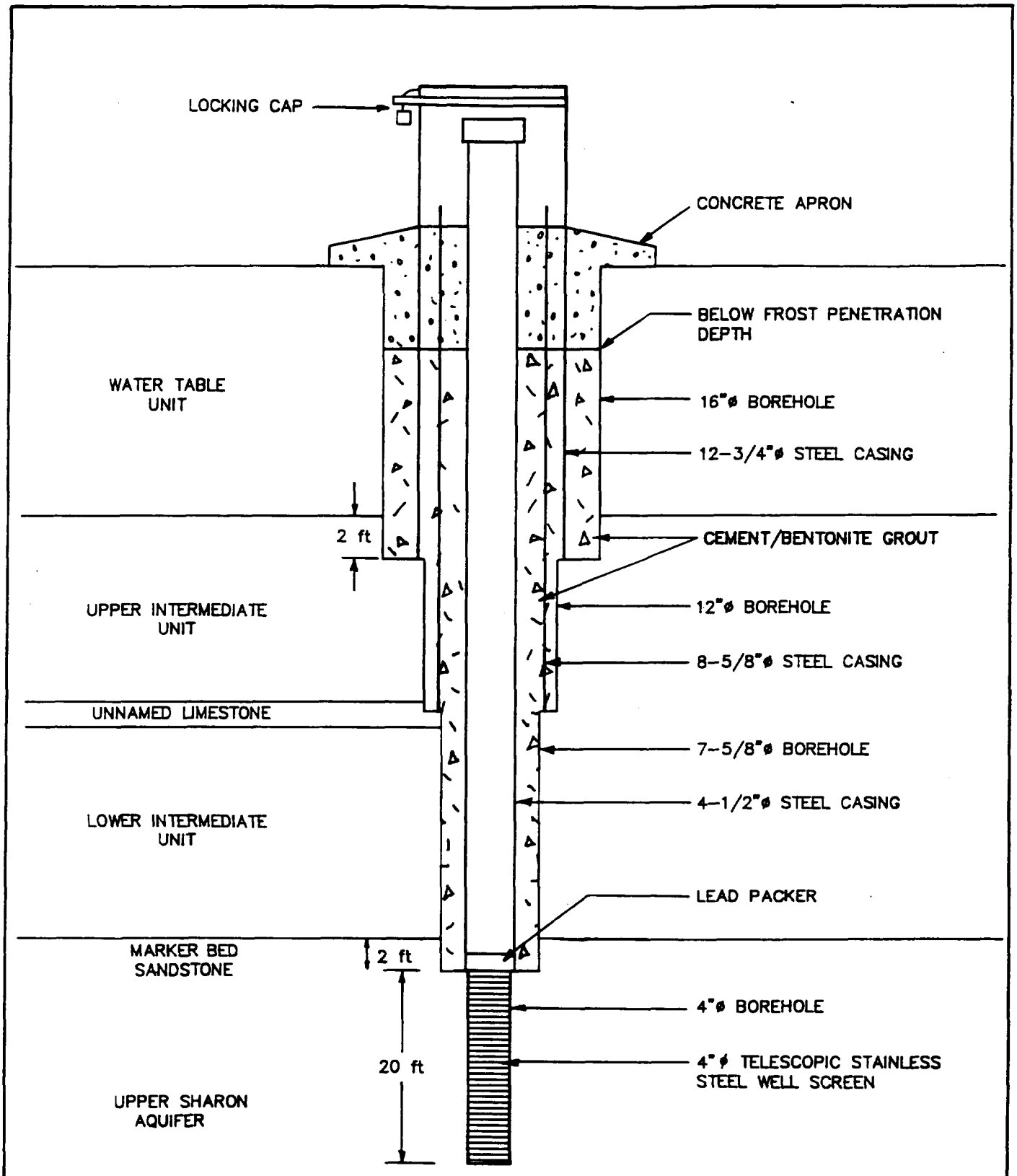

figure 8.6

TYPICAL UPPER SHARON UNIT MONITORING WELL
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

2372(35)-OCT.29/92-REV.1

The locations of the Agency selected residential wells are shown on Figure 8.7.

8.1.2.2 Hydraulic Monitoring

All monitoring wells and piezometers shown on Figures 8.2, 8.4 and 8.7 shall be utilized in the hydraulic monitoring program. Groundwater elevations shall be determined at the following frequency:

i) bi-weekly for three months after groundwater extraction system start-up;

ii) monthly for the remainder of the first year of operation; and

iii) quarterly thereafter.

After any significant adjustments to the groundwater extraction system, the frequency of water level monitoring shall be increased to bi-weekly for three months.

8.1.2.3 Groundwater Quality Monitoring

Site monitoring wells (19 in the WTU, 19 in the IU and four in the Upper Sharon Unit) , three Agency selected residential wells and extraction wells EW1, EW2, EW3, EW4, EW5 and EW6 in the IU shall be utilized in the groundwater quality monitoring program. The initial round of groundwater samples from the WTU and IU monitoring and extraction

(TO BE DETERMINED)

figure 8.7

RESIDENTIAL MONITORING WELL LOCATIONS
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

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wells shall be collected immediately after start-up of the groundwater extraction system, with a second and third round of samples collected six months after start-up and one year after start-up, respectively. For IU extraction wells, groundwater samples shall be collected on a monthly basis following system start-up for three months, then the sampling of these wells shall follow the same schedule outlined for the other monitoring wells completed in the IU. The four wells completed in the Upper Sharon Unit and the three Agency selected residential wells shall be sampled at start-up and at one year after start-up.

All samples collected shall be analyzed for the TCL parameter list effective at the time of the sampling event. The TCL parameter list effective as of February 1993 is listed in Appendix 8.2. The analyses for the first year sampling events will be evaluated and reviewed, and a Site-specific indicator parameter list will be developed by the SNFT. This list will be submitted to USEPA and OEPA for modification and/or approval.

Subsequent groundwater monitoring shall be conducted twice a year for the WTU and IU and each year for the Upper Sharon Unit for the second to fifth years following start-up, with all collected samples analyzed for the approved Site-specific indicator parameter list. At the end of the fifth year, and every fifth year thereafter until termination of the Consent Decree, all monitoring wells shall be monitored for the full TCL parameter list. Based on a review of the analytical data obtained from analyses of these samples, the Site-specific indicator parameter list may be amended and submitted to USEPA and OEPA for modification and/or approval.

After the first five years following start-up, groundwater monitoring shall be conducted bi-annually in the Upper Sharon Unit and once a year in the WTU and IU until termination of the Consent Decree.

The three residential wells shall be monitored again two years after start-up and bi-annually thereafter, until one year after it is confirmed that there is no or insignificant potential for off-Site migration of contaminated groundwater in potentially impacted groundwater units as demonstrated by groundwater and hydraulic monitoring data.

If the hydraulic and groundwater monitoring data indicate that Site-related contamination is significantly impacting the groundwater units on and/or off the Site outside of the established monitoring system, then additional piezometers and groundwater monitoring wells shall be installed to delineate the extent and degree of that Site-related contamination after the submittal of a sampling plan to USEPA and OEPA for modification and/or approval.

8.1.2.4 Data Evaluation and Reporting

The hydraulic data collected as part of the hydraulic monitoring program will be reduced to elevations and entered into a computer database. The water level data will be listed in tabular form for each round of data collected. Groundwater elevations will be contoured for the WTU and IU on Site plans, and the capture zones delineated. The data will be thoroughly evaluated to determine if the hydraulic gradients in the

WTU are directed towards the pipe and media drain from all points affected by past Site operations. The IU data will be evaluated to assess the capture areas of the extraction wells. The capture zones will demonstrate if horizontal flow within that portion of the unit affected by past Site operations is contained and collected.

Upon receipt of analytical results, data validation will be undertaken to determine if the data are acceptable for use in the groundwater quality monitoring program. If the data are deemed to be acceptable, all data, including Quality Assurance/Quality Control (QA/QC) data, will be entered into a computer database. The raw data packages, as received from the project laboratory, will be sent to USEPA and OEPA upon request, within 30 days of receipt, for QA review by USEPA and OEPA. After review by USEPA and OEPA, the data will be designated as approved or not approved for evaluating the effectiveness of the extraction systems.

The computer database shall provide the required listing and summary tables of analyses, including a separate listing of QA/QC data. The simplified data shall be used to determine the distribution of groundwater contamination. In order to illustrate the analytical results, appropriate plan view maps of selected analytes shall be prepared. As additional data are generated, graphical presentations of concentrations versus time also shall be prepared to demonstrate the temporal variations in contaminant concentrations.

The evaluation of the hydraulic and water quality data also shall be used to determine when the system operations can be terminated as described in Section 9.

An evaluation report on the effectiveness monitoring program shall be submitted on an annual basis to USEPA and OEPA. This evaluation report shall include:

i) analytical results and appropriate QA/QC data;
ii) hydraulic monitoring data;
iii) a description of the Site system maintenance activities and any encountered problems that require corrective action;
iv) an evaluation of the effectiveness of the groundwater extraction system, including tables and figures generated; and
v) recommendations for program revisions, if appropriate.

The USEPA and OEPA shall be notified in writing within seven calendar days of any encountered problems that may require corrective action for the extraction or monitoring systems.

8.1.2.5 Groundwater Monitoring Contingency Plan

The groundwater monitoring program shall monitor the performance of the groundwater extraction system with respect to its design criteria and requirements. If the system is not performing as designed or required, considering the time required to substantially attain steady-state

conditions, contingency actions shall be required. The criteria for implementation of contingency actions at the Site shall be as follows:

i) if hydraulic containment, collection and extraction in the WTU and IU is not achieved, beneath and off of the Site in the areas of Site-related groundwater contamination; and/or

ii) if Site-related contaminated groundwater is leaving the IU to the Upper Sharon Unit; and/or

iii) if Site-related groundwater contamination in the Upper Sharon Unit beneath and off of the Site exceeds cleanup standards.

The contingency actions that shall be undertaken if any or all of the above criteria are met shall include one or more of the following:

i) the extension of the groundwater collection pipe and media drain in the WTU; and/or

ii) the installation of groundwater extraction wells in the WTU; and/or

iii) the installation of additional groundwater extraction wells in the IU; and/or

iv) the installation of groundwater extraction wells in the Upper Sharon Unit.

8.1.3 Groundwater Treatment System Monitoring

To ensure that the integrity of the environment is being maintained, and to assess the performance of the treatment facility, a

monitoring schedule as discussed in the following sections shall be implemented.

8.1.3.1 Flow Measurement

Flow measurements shall be recorded as follows:

i) continuous measurement of influent flow to the groundwater treatment system; and

ii) continuous measurement of treated effluent flow discharged to the surface water drainage system.

The above flow measurement requirements will be met by recording the totalized influent flow rate and the totalized effluent flow rate on the Daily Process Log as described in Section 5.3.1.

8.1.3.2 Treated Effluent Analyses

The frequencies and types of analyses for treatment plant effluent monitoring are detailed in Table 8.1.

8.1.3.2.1 Compliance

In the event that contaminant levels in the effluent from the groundwater treatment system exceed the final effluent requirements for any singular sampling event, the frequency of sampling and analyses of the effluent for that contaminant grouping shall be increased to the weekly frequency schedule shown for Months 2 to 12 in Table 8.1. If the contaminant levels in the effluent continue to exceed the final effluent requirements for two consecutive events, then the groundwater treatment system shall be deemed to be in noncompliance with the final effluent requirements.

In the event of noncompliance with the appropriate effluent standards, the following steps shall be taken:

i) written notices shall be provided to the Director of OEPA and the USEPA-RPM within 10 days following receipt of the analyses of the original exceedance and the two consecutive samples collected from the treatment plant effluent; and

ii) treatment operations shall be amended to bring the system into compliance within two months of written notification; if the final effluent is less than the acute water quality criteria. The treatment system may be brought into compliance by adjusting the treatment system and/or the introduction of interim treatment technology (i.e. additional activated carbon, ultraviolet/peroxide treatment or air stripping). The treatment operations shall be amended immediately to bring the system into compliance, if the final effluent is greater than

TABLE 8.1

ANALYSES OF TREATMENT PLANT EFFLUENT
(CONSENT DECREE MONITORING REQUIREMENTS)
SUMMIT NATIONAL SITE
DEERFIELD, OHIO

	Priority Pollutant Volatile Organics (1)	*Priority Pollutant Organics (2)*	*Priority Pollutant Heavy Metals (3)*
Year 1			
Month 1	twice weekly	twice weekly	weekly
Months 2 to 12	weekly	bi-weekly	monthly
Year 2 Onward	monthly	monthly	quarterly

Notes:

(1) EPA Methods 601 and 602

(2) EPA Methods 624, 625 and 608

(3) Atomic Absorption, Graphite Furnace

the acute water quality criteria. The treatment system may be brought into compliance by passing the final effluent back through the system until the final effluent requirements are achieved; adjusting the treatment system; and/or the introduction of interim treatment technology.

The groundwater treatment system shall be deemed to have returned into compliance when three consecutive sampling events demonstrate conformance to the final effluent requirements. In this case, the frequency of sampling and analyses of the effluent shall return to the pre-noncompliance frequency mode.

In the event that a determination is made by any party that compliance can not be achieved without major revisions to the treatment system, that party shall provide written notice of such determination to the other parties. The SNFT shall develop and submit a plan for modifications, including a schedule for implementation, to the Agencies within three months of such determinations. Implementation of the proposed modifications will be completed in accordance with the schedule approved by USEPA and OEPA. In this instance, the frequency of sampling and analyses at start-up shall follow that as for a new installation, as shown in Table 8.1.

8.1.3.3 Air Emissions

Total priority pollutants in the air emissions from the equalization/aeration tank vapor phase carbon adsorber vent, and the biotower vapor phase carbon adsorber vent will be monitored annually. The method of analysis will be EPA Method 624.

8.2 GROUNDWATER TREATMENT SYSTEM UNIT PERFORMANCE EVALUATIONS

Regular sampling of specific groundwater treatment system units will be conducted to evaluate the following:

- metals and total suspended solids (TSS) removal efficiency of the inclined plate settler unit;
- biotower performance during normal operation;
- biotower start-up performance; and
- dewatered sludge toxicity to determine appropriate landfill disposal.

The required analyses of the above treatment system unit operations are summarized in Table 8.2.

8.2.1 Reporting of Analyses

A monthly report summarzing the treatment unit sampling results will be prepared and submitted to the SNFT.

TCLP

TABLE 8.2

ANALYSES OF TREATMENT SYSTEM UNIT OPERATIONS

SUMMIT NATIONAL SITE DEERFIELD, OHIO

Location of Sample	*Frequency*	*Analysis*	*Laboratory Turnaround Time*
<u>Metals and Solids Removal Evaluation</u>			
After P11 and before acid addition	monthly	Fe, Ca, Mg (soluable) TSS	24 hours
Influent to T1 before caustic addition	monthly	Fe, Ca, Mg (soluable) TSS	24 hours
<u>Biotower Normal Operation</u>			
Biotower	weekly	microbial count	24 hours
		COD	24 hours
		pH	24 hours
		dissolved oxygen	24 hours
	monthly	nitrogen	24 hours
		phosphorous	24 hours
	quarterly	Fe (soluable)	2 weeks
<u>Biotower Start-up</u>			
Inoculum tank	batch	microbial count	24 hours
Biotower	weekly	microbial count	24 hours
		COD	24 hours
		pH	24 hours
		dissolved oxygen	24 hours
	bi-weekly	nitrogen	24 hours
		phosphorous	24 hours
<u>Dewatered Sludge</u>			
Start-up	weekly	TCLP (1)	1 week
Normal operation	semi-annually	TCLP (1)	1 week

Note:

(1) TCLP - Toxic Contaminants Leachate Procedure

8.3 POTABLE WATER SUPPLY WELL

The on-Site potable water supply well, which supplies potable water for the groundwater treatment system building, will be sampled for the TCL parameter list immediately after installation, and on an annual basis thereafter.

It should be noted that the potable water supplied to the groundwater treatment building will only be used for cleaning and maintenance purposes and for the emergency shower. Drinking water will be provided by bottled water.

8.3.1 Reporting of Analyses

The results of the annual potable water supply well analyses will be summarized in a letter report which will be submitted to the SNFT.

APPENDIX 8.1

WELL INSTALLATION LOGS

APPENDIX 8.2

TARGET COMPOUND LIST

APPENDIX 8.2

TCL/TAL PARAMETER LIST
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

	Targeted Detection Limits[1]	
VOLATILE ORGANIC COMPOUNDS	*Water (µg/L)*	*Low Soil/Sediment (µg/kg)*
acetone	50	50
benzene	5	5
bromodichloromethane	5	5
bromoform	5	5
bromomethane	10	10
butanone	50	50
carbon disulfide	5	5
carbon tetrachloride	5	5
chlorobenzene	5	5
chloroethane	10	10
chloroform	5	5
chloromethane	10	10
cis-1,3-dichloropropene	5	5
dibromochloromethane	5	5
1,1-dichloroethane	5	5
1,2-dichloroethane	5	5
1,1-dichloroethene	5	5
1,2-dichloroethene (total)	5	5
1,2-dichloropropane	5	5
ethylbenzene	5	5
2-hexanone	50	50
methylene chloride	5	5
4-methyl-2-pentanone	50	50
styrene	5	5
1,1,2,2-tetrachloroethane	10	10
tetrachloroethene	5	5
toluene	5	5
trans-1,3-dichloropropene	5	5
1,1,1-trichloroethane	5	5
1,1,2-trichloroethane	5	5
trichloroethene	5	5
vinyl chloride	10	10
xylenes (total)	5	5

APPENDIX 8.2

TCL/TAL PARAMETER LIST
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

	Targeted Detection Limits	
SEMI-VOLATILE ORGANIC COMPOUNDS	*Water (µg/L)*	*Low Soil/Sediment (µg/kg)*
acenaphthene	10	330
acenaphthylene	10	330
anthracene	10	330
benzo(a)anthracene	10	330
benzo(a)pyrene	10	330
benzo(b)fluoranthene	10	330
benzo(g,h,i)perylene	10	330
benzo(k)fluoranthene	10	330
benzyl alcohol	10	330
bis(2-chloroethoxy)methane	10	330
bis(2-chloroethyl)ether	10	330
2,5-oxy bis (1-chloropropane)	10	330
bis(2-ethylhexyl)phthalate	10	330
butylbenzylphthalate	10	330
4-bromophenylphenyl ether	10	330
carbazole	10	330
4-chloroaniline	10	330
2-chloronaphthalene	10	330
4-chlorophenyl phenyl ether	10	330
chrysene	10	330
dibenz(a,h)anthracene	10	330
dibenzofuran	10	330
1,2-dichlorobenzene	10	330
1,3-dichlorobenzene	10	330
1,4-dichlorobenzene	10	330
3,3'-dichlorobenzidine	50	660
diethylphthalate	10	330
dimethylphthalate	10	330
di-n-butyphthalate	10	330
di-n-octylphthalate	10	330
2,4-dinitrotoluene	10	330
2,6-dinitrotoluene	10	330
fluoranthene	10	330
fluorene	10	330
hexachlorobenzene	10	330
hexachlorobutadiene	10	330
hexachlorocyclopentadiene	10	330
hexachloroethane	10	330
indeno(1,2,3-cd)pyrene	10	330
isophorone	10	330
2-methylnaphthalene	10	330

APPENDIX 8.2

TCL/TAL PARAMETER LIST
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

	Targeted Detection Limits	
SEMI-VOLATILE ORGANIC COMPOUNDS (CON'T)	*Water* ($\mu g/L$)	*Low* Soil/Sediment ($\mu g/kg$)
naphthalene	10	330
2-nitroaniline	50	1,600
3-nitroaniline	50	1,600
4-nitroaniline	50	1,600
nitrobenzene	10	330
N-nitroso-di-n-propylamine	10	330
N-nitrosodiphenylamine (diphenylamine)	10	330
phenanthrene	10	330
pyrene	10	330
1,2,4-trichlorobenzene	10	330
4-chloro-3-methylphenol	10	330
2-chlorophenol	10	330
2,4-dichorophenol	10	330
2,4-dimethylphenol	10	330
2,4-dinitrophenol	50	1,600
4,6-dinitro-2-methylphenol	50	1,600
2-methylphenol	10	330
4-methylphenol	10	330
2-nitrophenol	10	330
4-nitrophenol	50	1,600
pentachlorophenol	50	1,600
phenol	10	330
2,4,5-trichlorophenol	10	330
2,4,6-trichlorophenol	10	330

APPENDIX 8.2

TCL/TAL PARAMETER LIST
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

	Targeted Detection Limits	
	Water	*Low Soil/Sediment*
PESTICIDES	***(µg/L)***	***(µg/kg)***
Aldrin	0.05	8.0
Alpha-BHC	0.05	8.0
beta-BHC	0.05	8.0
alpha-Chlordane	0.5	8.0
gamma-Chlordane	0.5	8.0
4,4'-DDD	0.10	16
4,4'-DDE	0.10	16
4,4'-DDT	0.10	16
delta-BHC	0.05	16
Dieldrin	0.10	16
Endosulfan I	0.05	8.0
Endosulfan II	0.10	16
Endosulfan sulfate	0.10	16
Endrin	0.10	16
Endrin ketone	0.10	16
gamma-BHC (Lindane)	0.05	8.0
Heptachlor	0.05	8.0
Heptachlor epoxide	0.05	8.0
Methoxychlor	0.5	8.0
Toxaphene	1.0	160
PCBs		
Aroclor 1016	0.5	80
Aroclor 1221	0.5	80
Aroclor 1232	0.5	80
Aroclor 1242	0.5	80
Aroclor 1248	0.5	80
Aroclor 1254	1.0	160
Aroclor 1260	1.0	160

APPENDIX 8.2

TCL/TAL PARAMETER LIST
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

	Targeted Detection Limits	
INORGANICS	*Water (µg/L)*	*Low Soil/Sediment (µg/kg)*
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5,000	1,000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6
Magnesium	5,000	1,000
Manganese	15	3
Mercury	0.2	0.10
Nickel	40	8
Potassium	5,000	1,000
Selenium	5	1
Silver	10	2
Sodium	5,000	1,000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	1

[1]Actual sample detection limits are highly matrix and laboratory dependant and are not always achievable. Targeted detection limits presented are for guidance only and may not be achievable.

9.0 TERMINATION OF GROUNDWATER EXTRACTION AND TREATMENT SYSTEMS

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9.0 TERMINATION OF GROUNDWATER EXTRACTION AND TREATMENT SUBSYSTEMS

Each groundwater extraction system (WTU and IU) shall be operated to reduce Site-related contaminant concentrations below the cleanup (performance) standards in the groundwater on and off the Site. Cleanup standards for the Water Table Aquifer, Intermediate Aquifer and Upper Sharon Aquifer on Site and off Site shall be an individual 10^{-6} increased lifetime cancer risk for individual compounds and a cumulative noncarcinogenic Hazard Index (HI) less than 1 or background, whichever occurs first.

The cleanup standards shall be met unless the SNFT receive a waiver of such standards from the USEPA based on the demonstration that compliance with such standards is "technically impracticable from an engineering perspective". Waivers for technical impracticability shall be handled as set forth in the relevant provisions of the Consent Decree. SNFT may challenge USEPA's denial of the technical impracticability waiver under the relevant dispute resolution provisions of the Consent Decree.

For one year prior to the anticipated shutdown of the groundwater extraction system, the groundwater monitoring frequency shall be increased to quarterly. Once cleanup standards are initially attained, in any of the quarterly samples, three monthly sampling events shall be conducted. If cleanup standards are confirmed to have been attained in each of these monthly sampling events, operation of the groundwater extraction/collection

subsystem and the groundwater treatment subsystem shall be terminated, otherwise monitoring and operation of the extraction system will continue.

After termination of the extraction system, post-termination groundwater monitoring shall be conducted semi-annually for the first two years and annually for three years thereafter. If compliance with cleanup standards is confirmed through the five-year post-termination groundwater monitoring, monitoring activities shall cease.

If at any point in the five-year post-termination groundwater monitoring program data indicate noncompliance with cleanup standards, three consecutive monthly sampling events shall be conducted. If noncompliance is confirmed by any of the three sampling events, operation of the groundwater extraction and treatment subsystems will resume. The process and monitoring for subsequent termination of groundwater extraction after a resumption of operation shall be as set forth above for the initial termination of groundwater extraction.

9.1 PROJECT CLOSEOUT

Following the termination of the groundwater extraction and treatment subsystems, a Project Closeout Plan will be prepared and submitted to the USEPA. The Project Closeout Plan will address the following issues:

i) future ownership of the Site;

ii) future land use of the Site;

iii) closeout of the groundwater extraction/collection subsystem;

iv) closeout of the groundwater treatment equipment; and

v) closeout of the groundwater treatment building.

10.0 SITE HEALTH AND SAFETY PLAN

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10.0 ORGANIZATION AND BACKGROUND

The Site Health and Safety Plan (HSP) presented herein describes the health and safety procedures to be implemented during the longterm operation and maintenance at the Summit National Superfund Site (Site) in Deerfield Township of Portage County, Ohio. The Site is located at the intersection of Ohio Route 225 and U.S. Route 224, approximately 45 miles southeast of Cleveland, Ohio.

The Site is operated by two individuals and is manned 8 hours per day, 5 days per week and is within 15 minutes of a fully staffed hospital emergency room. The Site covers approximately 11.22 acres and is rectangular in shape.

Presently, all surface contamination has been removed from the Site and a clean 2-foot vegetated soil cover has been installed over the Site. Table 10.1 has been provided to show all the chemicals which were identified during the Remedial Investigation on or in the vicinity of the Site. A groundwater extraction and treatment system has been constructed at the Site to remove contaminants from the groundwater. The primary contaminated materials or chemical products which personnel will be handling and may be exposed to include the groundwater being extracted and treated, spent activated carbon, waste residues from the processing tanks and equipment, hydrochloric acid and caustic solution. The groundwater treatment system is completely enclosed and automated. Therefore, there is no routine handling of, or exposure to the contaminated groundwater by Site personnel. The most common hazards will be those associated with an

TABLE 10.1

CHEMICALS IDENTIFIED DURING THE REMEDIAL INVESTIGATION ON OR IN THE VICINITY OF THE SITE (1) SUMMIT NATIONAL SUPERFUND SITE DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

Volatile Organics	*Base Neutral and Acids*		*Pesticides and PCBs*	*Inorganics*
Vinyl Chloride	N-Nitrosodimethylamine	Diethylphthlate	Alpha-BHC	Aluminum
Methylene Chloride	Phenol	Fluorene*	Beta-BHC	Antimony
Acetone	Aniline	N-Nitrosodiphenylamine*	Delta-BHC	Arsenic
Carbondisulfide	1,3-Dichlorobenzene	Hexachlorobenzene	Gamma-BHC	Barium
Benzene	1,4-Dichlorobenzene	Pentachlorophenol	Heptachlor	Beryllium
2-Hexanone*	Benzyl Alcohol	Phenanthrene*	Aldrin	Cadmium
4-Methyl-2-Pentanone*	1,2-Dichlorobenzene	Anthracene*	Heptachlor Epoxide	Calcium
Tetrachloroethene	2-Methylphenol	Di-n-Butylphthlate	Endosulfan	Chromium
Toluene	4-Methylphenol*	Fluoranthene**	Dieldrin	Cobalt
Chlorobenzene	Hexachloroethane	Pyrene*	Endrin	Copper
Ethylbenzene	Isophorone	Butylbenzylphthalate*	4,4'-DDT	Iron
Styrene	2-Nitrophenol	Benzo (a) Anthracene	Toxaphene	Lead
Total Xylenes	2,4-Dimethylphenol*	Bis (2-ethylhexyl) Phthalate	Aroclor 1232***	Cyanide
1,1-Dichloroethene	Benzoic Acid	Chrysene	Aroclor 1242***	Magnesium
1,1-Dichloroethane	1,2,4-Trichlorobenzene	Di-n-Octyl Phthalate*	Aroclor 1248***	Manganese
1,2-Dichloroethane	Naphthalene*	Benzo (b) Fluoranthene**	Aroclor 1254***	Mercury
Trans-1,2-Dichloroethene	4-Chloro-3-Methylphenol	Benzo (k) Fluoranthene**	Mirex	Nickel
Chloroform	Hexachlorocyclopentadiene	Benzo (a) Pyrene**		Potassium
2-Butanone*	Dimethylphthalate	Indeno (1,2,3-cd) Pyrene**		Selenium
1,1,1-Trichloroethane	Acenaphthylene	Dibenzo (a,h) Anthracene**		Silver
1,1,2,2-Trichloroethane	Acenaphthene	Benzo (g,h,i) Perylene*		Sodium
Trichloroethene	4-Nitrophenol			Thallium
1,1,2-Trichloroethane	Dibenzofuran*			Tin
				Vanadium
				Zinc

Notes:

(1) Reproduced from Table 6-2 of the "Final Remedial Investigation Report", Volume 1, Summit National Site, Deerfield, Ohio, dated February 10, 1988.

* Lacks chronic toxicity data (USEPA, 1986a).

** Carcinogenic polynuclear aromatic hydrocarbons (PAHs) for which the potency factor for Benzo (a) Pyrene applies.

*** Potency factor for polychlorinated biphenyls (PCBs) applies to sum of Aroclors.

industrial facility and the potential for confined space entry work. Site personnel will have to work around operating equipment including pumps, blowers, and electrical equipment.

10.1 OCCUPATIONAL SAFETY AND HEALTH POLICY

The goal of the SNFT is to assure, to the highest degree possible, a safe and healthy working environment in order to protect the health and well-being of all Site personnel. This is done through training and by continual review of all our procedures, processes, and products in order to minimize exposures to known and potential hazards, by periodic monitoring of work areas and personal monitoring of individuals, and by informing workers of the hazard of the chemicals with which they work. Where engineering controls are not effective, or feasible, the most effective personal protective equipment will be provided and required. It is SNFT's policy to meet or exceed the requirements of laws and regulations relating to health, safety, and the environment.

10.2 BASIS

This Site is essentially operated as an industrial operation in which groundwater is treated in an automated treatment system and then discharged to a surface drainage ditch.

The federal health and safety regulations with which this Site must comply are primarily OSHA regulations in 29 CFR 1910 and 1926 which are applicable to any operating workplace. The majority of requirements for the Site are found in the following specific regulations:

- 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
- 29 CFR 1910.1200 Hazard Communication
- 29 CFR 1926.21 (b) (6) (i) Confined Space Entry
- 29 CFR 1910.134 Respiratory Protection

A brief review of each standard and method of compliance follows.

10.2.1 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

This Site falls most appropriately under the RCRA facility regulations found in 1910(o). These regulations require a written health and safety plan, a written hazard communication program, a medical surveillance program, 40 hours of initial safety training and 8 hours annual refresher training.

10.2.2 29 CFR 1910.1200 Hazard Communication

The hazard communication program requires that personnel be familiarized with the hazards presented by chemicals used in the workplace, the methods needed to protect themselves from those hazards, and the spill response methods necessary if a spill occurs. This training is required for each individual upon his initial assignment to the job.

10.2.3 29 CFR 1926.21(b) (6) Confined Space Entry

This requires that personnel required to enter confined spaces, such as the well chambers on Site, be instructed in the nature of the confined space hazard, the necessary precautions to protect from those hazards, and emergency equipment necessary for confined space entry.

10.2.4 1910.134 Respiratory Protection

This requires a written respiratory protection program which includes respirator use and selection criteria, training in the use and limitations of respirators, respirator cleaning requirements, storage, maintenance, and appropriate workplace surveillance to determine adequacy of use, and medical surveillance.

In addition, this HSP has been developed to ensure the following:

i) that Site-personnel are not adversely exposed to the compounds of concern;

ii) that public welfare or the environment are not adversely impacted by off-Site migration of contaminated materials due to work activities at the Site;

iii) compliance with applicable governmental and non-governmental [American Conference of Governmental Industrial Hygienist (ACGIH)] regulations and guidelines.

All operation and maintenance activities at the Site will be conducted in accordance with the provisions of this Site-specific HSP. Cost and or scheduling considerations will not be considered as justification for modifying this plan. A copy of this HSP and applicable Material Safety Data Sheets (MSDS) will be maintained on Site.

10.3 RESPONSIBILITIES AND ADMINISTRATION

The supervisor on Site (Site Manager) will be appointed to serve as the Site Safety Officer (SSO). The SSO will supervise the implementation of the HSP, ensure that all personnel are thoroughly trained in all Site procedures and be responsible for all decisions regarding work stoppages due to health and safety considerations.

Additional responsibilities of the SSO will be as follows:

i) be responsible for implementation of the HSP;

ii) conduct the initial briefing sessions for any new on-Site personnel with regard to the HSP and other safety requirements to be observed including;

a) potential Site hazards, (i.e. confined space entries);

b) personal hygiene principles;

c) personal protective equipment;

d) respiratory protection equipment usage, and

e) emergency procedures dealing with fire and medical situations.

iii) review and modify the HSP as more information becomes available concerning Site respiratory hazards;

iv) supervision and enforcement of safety equipment usage;

v) supervision and inspection of equipment cleaning;

vi) personnel training in safety equipment usage and emergency procedures;

vii) suspend operations if unsafe working conditions develop, including unsafe working conditions generated by adverse wind, rain and lightning;

viii) instruct and inform personnel of the Site Hazard Communication Program and the nature of chemical exposure risk as required by the "Right-to-Know" Law;

ix) recommend any additional medical examination;

x) coordination of emergency procedures;

xi) maintain a sign in/out log for personnel and visitors; and

xii) complete the weekly, monthly and yearly safety inspections included as Appendix 10.1 and maintain all health and safety records.

10.4 MEDICAL SURVEILLANCE

In accordance with requirements detailed in 29 CFR 1910.120 and 29 CFR 1910.134, all Site personnel who will come in contact with potentially contaminated materials will have received, within one year prior to starting work at the Site, medical surveillance by a licensed physician or physician's group.

Medical records for all Site personnel who will come in contact with potentially contaminated materials will be maintained by their respective employers. The medical records will detail the tests that were taken and will include a copy of the consulting physician's statement regarding the tests and the employee's suitability for work. These medical

records must be available to the employee or his designated representative upon written request, as outlined in 29 CFR 1910.120, Section (f).

Each employer will ensure and certify to the SSO that its personnel involved in Site operations associated with potentially contaminated materials will have had all necessary medical examinations prior to commencing work within contaminated areas. Personnel not obtaining medical certification and who do not have their records up-to-date will not perform work within contaminated areas.

Interim medical surveillance will be completed if an individual exhibits poor health or high stress responses due to on-Site operations or when accidental exposure to elevated concentrations of contaminants occurs.

10.5 TRAINING

The SSO will require that all Site personnel who will come in contact with potentially contaminated materials complete training sessions in accordance with 29 CFR 1910.120 prior to entering the Site. This training shall consist of a minimum of 40 hours of instruction off Site and three days of actual field experience under direct supervision. Each employer will maintain documentation stating that its on-Site personnel have complied with this regulation.

Prior to commencing any operations at the Site, all personnel will be required to attend Site-specific initiation sessions. These sessions, conducted by the SSO, will be used to instruct the Site personnel as to what the Site operations and potential Site hazards are, level of personal protective equipment required, Site-specific requirements, personnel and equipment decontamination procedures; emergency response plan and procedures, and the basis of the HSP. At this session it will be confirmed that all on-Site personnel have the 40 hours of training required in accordance with 29 CFR 1910.120. All personnel who attend this session will sign a Training Acknowledgment Form, an example of which is presented as Appendix 10.2.

During the course of Site operations, additional safety meetings will be conducted with on-Site personnel to provide updates on Site conditions and health and safety concerns.

10.6 SITE OPERATIONS AND WORK ACTIVITIES

The groundwater treatment and extraction system was designed and constructed for automatic operation in an entirely closed system, and as such represents the highest level of engineering control possible. Personnel are present to monitor and operate the system, with little necessity to contact the process water, except for routine maintenance of equipment, and periodic cleaning of certain units of the process system. Operators monitor the process through electronic readouts and controls in a

central control area separate from the process area. Operators routinely enter the process area to perform the following tasks:

- perform equipment inspections; pump down various tanks;
- general housekeeping;
- equipment maintenance; and
- switching units.

Process water samples are analyzed on-Site in a lab hood in the designated laboratory room. In addition, personnel must routinely perform the following tasks where a potential chemical exposure occurs:

- sampling activities; waste handling activities (i.e. sludge generated from the bag filter);
- decontamination activities for sampling equipment; confined space entries into the wet well and extraction well chambers;
- maintenance activities associated with the process equipment; and
- bulk acid, caustic and activated carbon transfers.

Table 10.2 provides a Hazard/Risk Analysis for Site Operations and Levels of Personal Protective Equipment (PPE) required for each operation.

HAZARD/RISK ANALYSIS FOR SITE OPERATIONS
OPERATION, MAINTENANCE AND MONITORING
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

Site Operations	*Anticipated Hazard/Risks*	*Level of PPE Required*
Perform equipment and Site inspections, pump down various tanks, general housekeeping. Maintenance activities (without exposure to Site contaminants or raw chemical products).	• slip/trip/fall hazards • potential personal injuries potential back injuries from moving and lifting equipment • electrical hazards • potential hand injuries while using tools during maintenance activities	• level D
Groundwater or Process Water Sampling Activities	• slip/trip/fall hazards • potential personal injuries • potential back injuries from lifting and moving specialized sampling equipment • direct contact with contaminated groundwater	• modified level D, or level C if air monitoring results indicate the need
Decontamination activities (for sampling equipment and other machinery or equipment), waste handling activities and maintenance activities (with exposure to Site contaminants or transferring of raw chemical products)	• slip/trip/fall hazards • potential personal injuries • potential back injuries from lifting and moving equipment • potential and direct contact with Site contaminants, wastes, spent activated carbon and chemicals being stored on-Site • direct contact with decontamination solvents • potential hand injuries while using hand tools • hazards presented by the use of specialized decontamination equipment (i.e. steam cleaning unit)	• Level C, or level B if air monitoring results indicate the need

TABLE 10.2

HAZARD/RISK ANALYSIS FOR SITE OPERATIONS
OPERATION, MAINTENANCE AND MONITORING
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

Site Operations	*Anticipated Hazard/Risks*	*Level of PPE Required*
Confined space entry into wet well or extraction well chambers	• slip/trip/fall hazards • direct contact with contaminated groundwater • potential personal injuries • hazards associated with confined space entries (1) • potential back injuries from moving specialized confined space entry equipment • hazards presented by the use of specialized decontamination equipment (i.e. steam cleaning unit)	• Level C, or Level B if air monitoring results indicate the need

Notes:

(1) Specific requirements for confined space entry are specified in Section 10.16.

10.7 PERSONAL PROTECTIVE EQUIPMENT (PPE)

Site operations require that all personnel are equipped with PPE appropriate for the nature of work being completed. Most Site operations will be performed in the standard work clothing (long sleeve shirt and pants) accompanied by hard hats, safety glasses, work gloves and steel toed work shoes. All safety equipment and protective clothing are to be kept clean, well-maintained and in good condition.

Safety equipment and apparel as required for general work on Site will be Level D, modified Level D, Level C and/or Level B. The Level of personal protection required for each Site operational activity is presented in Table 10.2.

Level D PPE which will be used on-Site consists of the following:

i) standard work clothing (long sleeve shirt and pants or cotton overalls);
ii) steel toed work boots;
iii) hard hat;
iv) safety glasses; and
v) gloves as required.

Modified Level D PPE which will be used on-Site consists of the standard Level D PPE plus:

i) chemical resistant clothing (i.e. polycoated tyveks);

ii) inner disposable nitrile gloves; and

iii) outer nitrile gloves.

Level C PPE which will be used on-Site consists of wearing all Level D PPE and the following additional equipment:

i) air-purifying respirator, half-face or full-facepiece (MSHA/NIOSH approved), equipped with organic vapor/acid gas (OV/AG) cartridge with a high efficiency particulate air (HEPA) filter;

ii) chemical resistant clothing (i.e. polycoated tyveks or acid suit when working with acids or caustics)

iii) inner disposable nitrile gloves;

iv) outer nitrile gloves;

v) outer boot (chemical resistant); and

vi) two-way radio communications.

Level B PPE which may be used on-Site consists of wearing all Level C PPE and the following additional equipment:

i) supplied-air respirator (MSHA/NIOSH approved) to replace the air-purifying respirator. Respirators may be positive pressure demand, self contained breathing apparatus (SCBA) or positive pressure-demand, airline respirator (with escape bottle for Immediate Danger to Life and Health (IDLH) or potential for IDLH atmosphere).

Additional protective equipment usage guidelines to be implemented include:

i) prescription eyeglasses in use on the Site will be safety glasses;

ii) contact lenses will not be permitted;

iii) all disposable or reusable nitrile or cotton gloves worn on the Site will be changed, decontaminated or discarded at the end of each day;

iv) during periods of respirator usage, respirator cartridges and filters will be changed daily, or upon breakthrough, whichever occurs first;

v) Site personnel who have not passed a respirator fit test will not be allowed to enter active areas. Personnel will not be permitted to have beards, or long sideburns or mustaches as these interfere with a proper fit of the respirator;

vi) all PPE worn on Site will be decontaminated or discarded at the end of each work day; and

vii) duct tape will be used to ensure that disposable coveralls and gloves are tightly secured.

10.8 RESPIRATORY PROTECTION PROGRAM

Respirators will be worn on Site during various work activities. All Site personnel will have to undergo training in the use of, and have been fit tested for, either a half-or full-facepiece respirator. Respirators are to be worn for all Site operations which require Level C or B protection. As more information becomes available after air monitoring results are reviewed, the respiratory protection levels may be modified by the SSO.

A photoionization detector will be available on Site to monitor operations where organic vapors are present. The main purpose for conducting this routine monitoring is to document worker exposures and verify the adequacy of respiratory protection equipment. Background readings will be established prior to commencing operations which generate or may generate organic vapors.

Action levels to determine the level of respiratory protection necessary during certain Site operations are based on the concentration of unknown organic vapors measured within the breathing zone. The action levels and appropriate respiratory protection for these Site operations are as follows:

Sustained Organic Vapor Reading Above Background within Breathing Zone	*Action Taken*
0 - 1 ppm or background	half- or full-facepiece air purifying respirator available
1-5 ppm	wear half- or full-face air purifying respirator
5-50 ppm	wear supplied air respirator
>50 ppm	shut down activities, implement additional engineering controls

However, if ambient concentrations of organic vapors are due to identifiable substances, the level of respiratory protection may be altered by the SSO.

Periodic air monitoring data may be obtained to correlate with total organic vapor readings from which the level of respiratory protection may be adjusted.

Respirators should be cleaned after each days use and be stored in a manner to keep them clean. When storing respirators do not place other heavier items on top of them to avoid distorting the fit of the facial piece.

10.9 PERSONAL HYGIENE

The SSO will require that all personnel performing work on Site observe and adhere to the personal hygiene-related provisions of this section.

On-Site personnel found to be disregarding the personal hygiene-related provisions of this HSP will, at the discretion of the SSO, be barred from the Site.

The following equipment/facilities are available for the personal hygiene of Site personnel:

i) disposable outerwear, gloves and respiratory protection equipment and supplies;

ii) disposal containers for used disposable PPE;

iii) emergency eye wash and shower facilities;

iv) potable water; and

v) a suitable sanitation facility.

The SSO also will enforce the following regulations for on-Site personnel:

i) personnel will wear appropriate PPE when involved with operations;

ii) used PPE will not be reused if deemed to be unsuitable to provide the necessary protection, and when removed, will be placed inside disposal containers provided for that purpose;

iii) smoking, eating and drinking will only be allowed in designated areas; and

iv) on-Site personnel will thoroughly cleanse their hands, face, neck area and other exposed areas before smoking, eating, drinking or using toilets and before leaving the Site.

10.10 AIR MONITORING

Due to the low hazard presented by routine operations of the closed system on Site, continuous air monitoring is not required for these operations. From time to time routine industrial hygiene air monitoring should be undertaken in the work area to monitor for levels of chemicals

used in the workplace or to investigate any concerns expressed by personnel. Any monitoring results should be reported to personnel and permanently kept on file.

Periodic air monitoring measurements will be taken by the SSO during work activities which generate organic vapors. A photoionization detector will be kept on Site for this purpose. The photoionization detector will be calibrated prior to use in accordance with the manufacturers guidelines, and such calibration will be recorded in the Site daily log book along with any air monitoring measurements.

Measurements will be taken in the breathing zone of personnel in the active area as needed. Background measurements immediately upwind of the active area will be taken prior to measuring in the active area.

Respiratory protection levels for quantities of unknown organic vapors are discussed in Section 10.8. Respiratory protection levels for routine Site operations are presented in Table 10.2. As additional air monitoring and periodic industrial hygiene monitoring information becomes available and upon its review, the SSO may revise the respiratory protection levels required for Site operations.

Immediately upon identifying sustained elevated levels of organic vapors (greater than 5 parts per million), the SSO will be notified so that a determination can be made as to the upgrading of respiratory protection levels or if operations should be temporarily shut down.

10.11 COMMUNICATIONS

Emergency numbers including police, fire, ambulance, hospital and appropriate Regulatory Agencies are presented in Table 10.3 and will be prominently posted near the Site telephone(s).

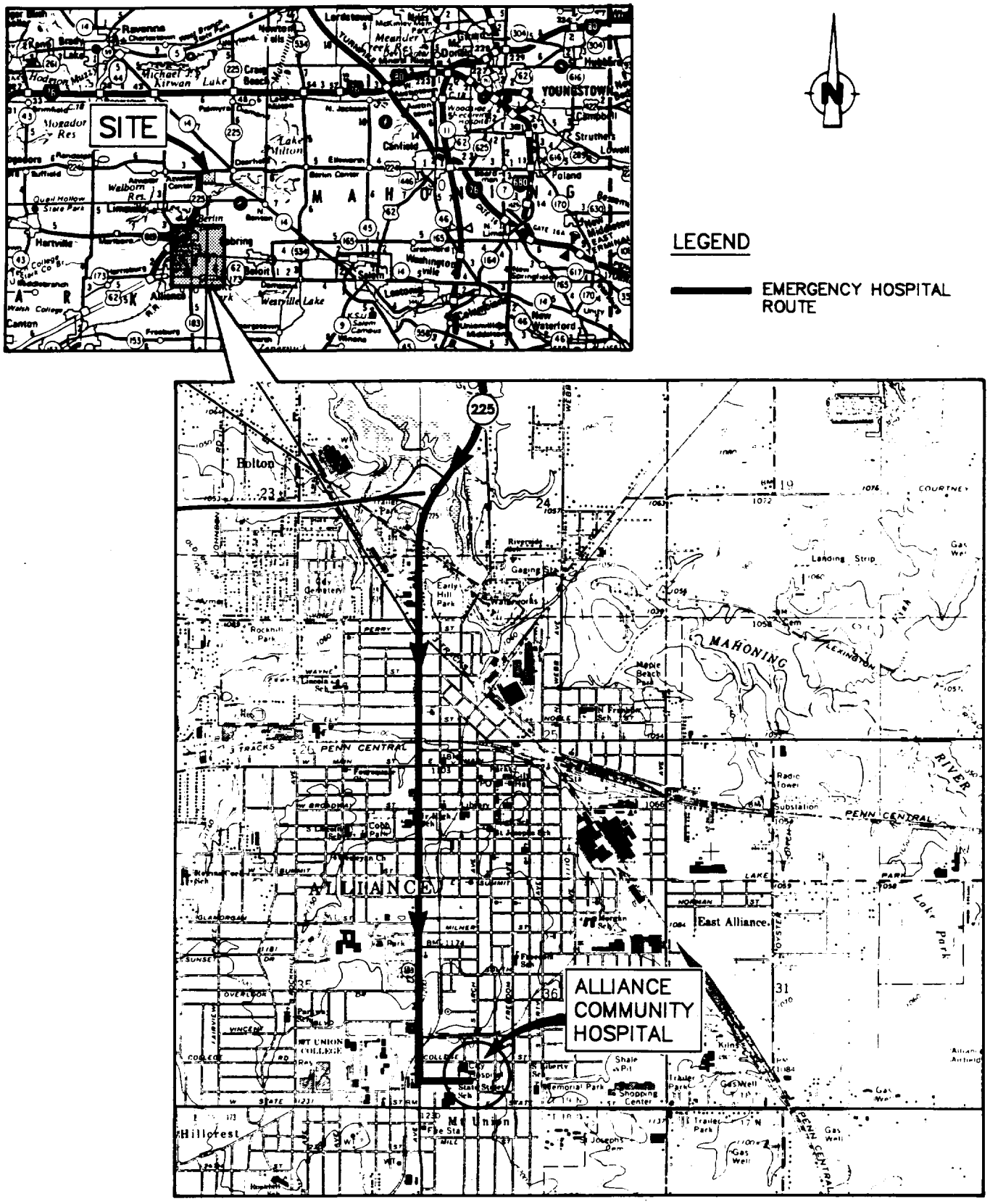
A route map to the nearest emergency medical facility is presented in Figure 10.1 and will be posted near each Site telephone and in each operator vehicle. The name and address of the nearest emergency medical facility is as follows:

Alliance Community Hospital
264 East Rice Street
Alliance, Ohio

10.12 EMERGENCY AND FIRST AID EQUIPMENT

The following emergency and first aid equipment will be available for use on Site:

i) portable emergency eye wash and shower;
ii) two 20-pound ABC type dry chemical fire extinguishers;
iii) approved first-aid kit for a minimum of 10 personnel;
iv) fire blanket;



SOURCES: OHIO OFFICIAL TRANSPORTATION MAP, 1987
AND USGS QUADRANGLE MAP; ALLIANCE, OHIO

figure 10.1

EMERGENCY HOSPITAL ROUTE
SUMMIT NATIONAL SUPERFUND SITE
Deerfield Township of Portage County, Ohio

CRA

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TABLE 10.3

EMERGENCY TELEPHONE NUMBERS
SUMMIT NATIONAL SUPERFUND SITE
DEERFIELD TOWNSHIP OF PORTAGE COUNTY, OHIO

General Emergency (Portage County Sheriff's Dept.)	911 or (216) 678-7012
Ambulance	911 or 584-2222
Hospital (Alliance Community Hospital)	(216) 821-1000
Ohio DOH (Akron)	(216) 379-1300
Ohio EPA (District)	(216) 425-9171
Ohio EPA Local Air Agency (Regional - Akron)	(216) 375-2480
Poison Control Center	(800) 962-1253
USEPA National Response Center	(800) 438-2427
State Police	(216) 297-1441
Portage County Health Department	(216) 296-9919
Emergency Spill Contractor	to be supplied

v) two SCBA units; and

vi) a portable air horn.

This equipment will be periodically inspected and maintained in a ready to use mode. All Site personnel will be trained in the use of this equipment.

10.13 EMERGENCY RESPONSE PLAN

This plan is intended to provide immediate response to a serious Site occurrence such as fire, medical, emergency or chemical spill. All Site personnel will be trained in these procedures upon arrival at the Site.

The following procedures are to be followed for specific Site emergencies:

i) Fire Emergency

In the unlikely event of a fire, the person discovering the fire shall do the following:

- sound the alarm and ensure that all personnel are aware of the fire;
- immediately notify the fire department;
- if possible, extinguish the fire using portable fire extinguishers. If an electrical fire, electrically disconnect equipment;

- the senior person present should muster personnel in front of the building and account for all personnel; and
- upon arrival of the fire department, direct them to the fire and acquaint them with potential hazards at the Site.

ii) Medical Emergency

The policy of the Site is that medical emergencies should be handled by local emergency medical technicians summoned to the Site and that the injured or distressed individual should be transported to the local hospital emergency room in an ambulance. Minor first aid cases not requiring professional medical attention can be handled on Site and it is desirable that all employees maintain a current Red Cross First Aid and CPR certification. In the event of a medical emergency, personnel shall do the following:

- upon discovering an injured or distressed person, or witnessing an accident, call for immediate assistance and have someone call for outside help (rescue squad, ambulance);

- the distressed or injured person should be removed from any life threatening condition, without needlessly endangering the rescuer;

- the injured or distressed person should not be moved unless absolutely necessary and then by a trained individual; and

- if treatment on Site is necessary to sustain life or minimize serious injury, personnel can undertake that action. For example, this might include CPR, curtailing serious bleeding, etc. Otherwise, do not move the injured or distressed person.

iii) Chemical Spill

The policy of the Site is that personnel will not handle serious chemical spills at the Site. (Note that the likelihood of a serious spill is minimal). If a serious spill should occur, personnel shall evacuate the facility and call an emergency response spill contractor to handle the cleanup. However, employees are expected to respond to minor spills of chemicals used at the facility which they routinely handle. Specific protective clothing, respiratory protection equipment, and clean-up procedures will be discussed.

A general spill response methodology follows:

- personnel discovering a chemical spill shall first ensure that all Site personnel are aware of the spill;

- the spill area and adjacent areas should be isolated from unprotected personnel by establishing spill boundaries. An emergency response contractor may be called if necessary;

- personnel who enter the spill area should don appropriate respiratory protection and protective clothing (see MSDS for the specific chemical for protective clothing requirements);

- personnel should undertake containment action to reduce spill migration. This action would include diking with sand or dirt, covering drains, collection of product in captive sumps, and sorbing on charcoal, sand or dirt;

- personnel should then clean up the area, depositing spilled material and sorbent in suitable containers. If quantities warrant, a spill contractor should be used to collect the spilled material;

- the area of the spill should then be decontaminated or neutralized to remove the spilled material completely; and

- personnel and equipment should then be decontaminated as necessary.

10.14 EQUIPMENT AND PERSONNEL DECONTAMINATION

During routine Site operations procedures will be implemented to reduce the amount of contact of both personnel and equipment with the waste constituents. These procedures include the following:

i) proper work practices that would lead to minimal direct contact with potentially contaminated material (e.g. avoid contact in areas of obvious contamination, remote sampling and handling procedures, etc.);

ii) use of disposable equipment and clothing as much as practicable; and

iii) encase source of contaminants (e.g. with plastic sheeting).

Upon completion of all contaminated work activities, any equipment which came in contact with potentially contaminated material will be decontaminated in the designated decontamination area in the Treatment Building.

Personnel wearing protective clothing will remove it and dispose of it in a covered disposal container. They will then proceed to the wash area and wash their hands, face, neck and other exposed areas before entering the lunchroom or other clean areas on Site.

10.15 CONTAMINATION MIGRATION CONTROL

Decontamination, if required, will consist of the thorough cleaning, using a high pressure cleaner, of those parts of the equipment which came in contact with potentially contaminated material. The SSO will certify that each piece of equipment is clean or has been decontaminated prior to removal from Site.

All decontamination wash waters and decontamination solvents will be collected and treated in the on-Site groundwater treatment system.

10.16 CONFINED SPACE ENTRY PROCEDURE

A confined space provides the potential for unusually high concentrations of contaminants, explosive atmospheres, oxygen deficient atmospheres, limited visibility and restricted movement. This Section establishes requirements for safe entry into, continued work in, and safe exit from confined spaces. Additional information regarding confined space entry can be found in 29 CFR 1926.21, 29 CFR 1910 and NIOSH 80-106. At this Site, confined spaces are any tanks or vessels which need to be entered for cleaning purposes and entry into the wet well chamber, extraction well chambers or any manhole which is part of the groundwater extraction system.

10.16.1 Definitions

Confined Space: A space or work area not designed or intended for normal human occupancy, having limited means of egress and poor natural ventilation; and/or any structure, including buildings or rooms, which have limited means of egress.

Confined Space Entry Permit (CSEP): A document to be initiated by the supervisor of personnel who are to enter into or work in a confined space. The CSEP will be completed by the personnel involved in the entry and approved by the SSO before personnel will be permitted to enter the confined space. The CSEP shall be valid only for the performance of the work identified on the permit and for the location and time specified on the permit. The beginning of a new shift with change of personnel will require the issuance of a new CSEP. A copy of a CSEP is provided in Appendix 10.3.

Confined Space Observer: An individual assigned to monitor the activities of personnel working within a confined space. The confined space observer monitors and provides external assistance to those inside the confined space. The confined space observer summons rescue personnel in the event of emergency and assists the rescue team.

10.16.2 General Provisions

The following general provisions will apply to confined space entry:

i) when possible, confined spaces should be identified with a posted sign which reads: Caution - Confined Space;

ii) only personnel trained and knowledgeable of the requirements of these confined space entry procedures will be authorized to enter a confined space or be a confined space observer;

iii) a CSEP must be issued prior to the performance of any work within a confined space. The CSEP will become a part of the permanent and official health and safety record for the response action at the Site;

iv) natural ventilation shall be provided for the confined space prior to initial entry and for the duration of the CSEP. Positive/forced mechanical ventilation may be required. However, care should be taken to not spread contamination outside of the enclosed area;

v) if flammable liquids are anticipated to be within the confined space, explosion proof equipment will be used. All equipment shall be positively grounded;

vi) the contents of any confined space shall, where necessary and where possible, be removed prior to entry. All sources of ignition must be disconnected and/or removed prior to entry;

vii) hand tools used in confined spaces shall be in good repair, explosion proof and spark proof, and selected according to intended use. Where possible, pneumatic power tools are to be used;

viii) hand-held lights and other illumination utilized in confined spaces shall be equipped with guards to prevent contact with the bulb and must be explosion proof;

ix) compressed gas cylinders, except cylinders used for self-contained breathing apparatus, shall not be taken into confined spaces. Gas hoses shall be removed from the space and the supply turned off at the cylinder valve when personnel exit from the confined space;

x) if a confined space requires respiratory equipment or where rescue may be difficult, safety belts, body harnesses, extraction equipment and lifelines will be used. The outside observer shall be provided with the same equipment as those working within the confined space;

xi) a ladder or extraction device is required in all confined spaces deeper than the employee's shoulders. The ladder shall be secured and not removed until all employees have exited the confined space;

xii) only SCBA or NIOSH approved airline respirators equipped with a 5-minute emergency air supply (egress bottle) shall be used in untested confined spaces or in any confined space with conditions determined immediately dangerous to life and health;

xiii) where air-moving equipment is used to provide ventilation, chemicals shall be removed from the vicinity to prevent their introduction into the confined space;

xiv) vehicles shall not be left running near confined space work or near air-moving equipment being used for confined space ventilation;

xv) smoking in confined spaces will be prohibited at all times; and

xvi) any deviation from these confined space entry procedures requires the prior permission of the SSO.

10.16.3 Procedures for Confined Space Entry

The SSO and confined space entry personnel shall adhere to the following confined space entry procedures:

i) evaluate the job to be done and identify the potential hazards before a job in a confined space is scheduled;

ii) ensure that all process piping, mechanical and electrical equipment, etc., have been disconnected, purged, blanked-off or locked and tagged as necessary;

iii) if possible, ensure removal of any standing fluids that may produce toxic or air displacing gases, vapors or dust;

iv) initiate a CSEP in concurrence with the Site Supervisor;

v) ensure that any hot work (welding, burning, open flames or spark producing operation) that is to be performed in the confined space has been approved by the Supervisor and is indicated on the CSEP;

vi) ensure that the confined space is ventilated before starting work in the confined space and for the duration of the time that the work is to be performed in the confined space;

vii) ensure that the personnel who enter the confined space and the confined space observer helper are familiar with the contents and requirements of this instruction and the CSEP;

viii) ensure remote atmospheric testing of the confined space prior to and during employee entry and before validation/revalidation of a CSEP to ensure the following requirements:

a) oxygen content between 19.5 percent - 23.0 percent,

b) no concentration of combustible gas in the space. Sampling will be done throughout the confined space and specifically at the lowest point in the space,

c) the absence of other atmospheric contaminants if the space has previously contained toxic, corrosive or irritant material, and

d) if remote testing is not possible, Level B PPE is required for confined space entry;

ix) designate whether hot or cold work will be allowed. If all tests are satisfactory, complete the CSEP listing any safety precautions, protective equipment or other requirements; and

x) ensure that a copy of the CSEP is posted at the work Site and a copy is filed with the work supervisor.

The CSEP shall be considered void if work in the confined space does not start within one hour after the tests in Item viii) above are performed or if significant changes within the confined space atmosphere or job scope occurs.

The CSEP posted at the work Site shall be removed at the completion of the job or the end of the shift, whichever is first.

10.16.4 Confined Space Observer

The duties of the confined space observer are as follows:

i) while personnel are inside the confined space, a confined space observer will monitor the activities and provide external assistance to those in the confined space. The observer will not have other duties which may take his attention away from the work or require him to leave the vicinity of the confined space at any time while personnel are in the confined space;

ii) the confined space observer shall maintain at least voice contact with all personnel in the confined space. Visual contact is preferred, if possible;

iii) the confined space observer shall be instructed by his supervisor or the SSO in the method for contacting rescue personnel in the event of an emergency;

iv) if irregularities within the confined space are detected by the observer, personnel within the confined space will be ordered to exit;

v) in the event of an emergency, the confined space observer must not enter the confined space prior to contacting and receiving assistance from a helper. Prior to this time, he should attempt to remove personnel with the lifeline and to perform all other rescue functions from outside the space; and

vi) a helper shall be designated to provide assistance to the confined space observer in case the observer must enter the confined space to retrieve personnel.

10.17 HEAT STRESS

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. In particular, heat stress can be evident as:

i) heat rash;
ii) heat cramps;
iii) heat exhaustion; and/or
iv) heat stroke.

Although heat stress is not expected to pose a problem during routine Site operations, these hazards will be discussed during safety meetings and before commencement of work activities, when relevant. Personnel must increase consumption of water and electrolyte-containing beverages, such as Gatorade, during warm and hot weather conditions.

At a minimum, personnel will break approximately every two hours for 10- to 15-minute rest periods. In addition, they will be encouraged to take rests whenever they feel any adverse effects that may be heat related. The frequency of breaks may need to be increased upon worker recommendation to the SSO.

A work/rest schedule will be calculated based on heat stress monitoring results. Monitoring will consist of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area. The frequency of monitoring the radial pulse will be as follows:

Ambient Temp.	*Modified Level D PPE*	*Level C PPE/Level B*
90°F or above	After 45 min. of work	After 15 min. of work
87.5°F - 90°F	After 60 min. of work	After 30 min. of work
82.5°F - 87.5°F	After 90 min. of work	After 60 min. of work
77.5°F - 82.5°F	After 120 min. of work	After 90 min. of work
72.5°F - 77.5°F	After 150 min. of work	After 120 min. of work

If the heart rate exceeds 110 beats per minute at the beginning of the rest period, the next work cycle will be shortened by 1/2 and the rest period will be kept the same. If the heart rate still exceeds 110 beats

per minute at the next rest period, the following rest period will be increased by 1/3. The initial rest period will be at least five minutes.

Monitoring for heat stress will begin when the ambient temperature reaches or exceeds 70°F when wearing Level C or Level B PPE, or 80°F when wearing Level D PPE and humidity levels are above 50 percent.

10.18 COLD STRESS

With outdoor work in the winter months, the potential exists for hypothermia and frostbite.

Protective clothing greatly reduces the possibility of hypothermia to personnel. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees must also change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

In cold weather, the potential for frostbite exists, especially in body extremities. Personnel must pay particular attention to hands, feet and any exposed skin when dressing. Personnel will be advised to obtain more clothing if they begin to experience loss of sensation due to cold exposure.

Site personnel will be encouraged to seek heated shelter at regular intervals, depending upon the severity of ambient temperatures.

Symptoms of cold stress, including heavy shivering, excessive fatigue, drowsiness, irritability or euphoria will necessitate immediate return to the heated shelter.

APPENDIX 10.1

SAFETY INSPECTION LISTS

WEEKLY SAFETY INSPECTION LIST

This list should be reviewed each week (preferably the same day each week). Discrepancies should be corrected before the end of the day or arrangements made for timely correction.

		Check if OK or Indicate Discrepancy
1.	General Housekeeping	
	Equipment returned to the proper location	☐
	Aisles and walkways free from tripping hazards	☐
	Floors swept	☐
	Ladders and platforms proper	☐
	Trash disposed of	☐
2.	Personal Protective Equipment	
	Used as required	☐
	Respirators	☐
	Dust masks	☐
	Tyvek coveralls	☐
	Hard hats	☐
	Safety shoes	☐
	Safety glasses	☐
	Chemical splash goggles	☐
	Boots	☐
	Gloves	☐
	Cleaned and stored properly	☐
3.	Tools/equipment	
	Damaged tools tagged/removed from service	☐
	Tools returned to proper storage	☐
	Tools used for proper tasks	☐
	Tools cleaned and maintained	☐

4. Electrical

- Faulty wiring corrected ☐
- Lighting replaced ☐
- Circuits locked out as necessary ☐
- Extension cords correct ☐

5. Chemicals

- Stored as required ☐
- Spills cleaned up ☐
- Proper dispensing ☐
- All containers labeled ☐
- MSDS book available ☐

6. Lab Hood

- Chemicals properly stored ☐
- Cleaned properly ☐
- Good housekeeping ☐
- Sash free ☐
- Proper lighting and ventilation ☐

7. Machinery

- Guards in place ☐
- Oil leakage cleaned up ☐
- Properly maintained ☐
- Belts and pulleys tight ☐
- Properly Operating ☐

8. Emergency equipment

- Fire extinguishers ☐
- Eye wash ☐
- Shower ☐
- Sink ☐
- Hand soap ☐
- Hand towels ☐
- Exit signs ☐
- First aid kit ☐
- Spill control equipment ☐
- Emergency lighting ☐

9. Forklift

- Qualified operators ☐
- Backup alarm operative ☐
- Propane cylinder secured ☐
- Brake set ☐
- Fully operational ☐

10. Work practices

- Trained operators ☐
- Proper lifting techniques ☐
- Proper use of tools ☐
- Proper use of protective equipment ☐
- Eating, drinking and smoking in approved areas only ☐

MONTHLY SAFETY INSPECTION LIST

This list should be reviewed once a month, preferably on the same day, for example, the last working day of each month. This list should be dated, signed, and filed as an indication that safety procedures are being observed. Where discrepancies exists, corrective action should be noted.

Employees

- Hearing Protection
  - Are they wearing hearing protectors where required? ☐
  - Correct type--approved by Medical--validated fit. ☐
  - Are protectors clean? Are they careful not to roll ☐
  - with dirty (contaminated) hands? ☐
  - Properly inserted. ☐
  - Adequate for job. ☐
- Respirators
  - Are employees trained? Approved by Medical ☐
  - Correct one for job. ☐
  - Wearing them properly. ☐
  - Proper storage (longer term and between jobs). ☐
  - Proper decontamination - job site and central. ☐
  - Proper inspection properties - job site - central. ☐
- PPE (Personal Protective Equipment)
  - Clean. ☐
  - In good shape - no tears, holes, contaminants on skin side ☐
  - Proper for job. ☐
- Are they working safely - proper positioning? ☐

- Talk to Them

  Do they know about C, R, & D chemicals in their areas? ☐

  Do they know chemicals in their area? ☐

  Do they know hazards of chemicals they work with? ☐

  Do they remember anything we covered in the annual communications? ☐

  Do they know about MSDSs and where the book is kept? ☐

  Do they know about spill practices? ☐

- Listen to Them - Answer Questions Respond to Concerns Followup on Any Leads or Questions Immediately

Work Area

- Noise

  Should noise be checked in this area? Is area properly marked? ☐

  Is there an annual noise survey? Is it in order? ☐

  Meter - is it working and checked annually? ☐

- Ventilation

  Does it exist? ☐

  Is it needed? ☐

  Is it adequate? ☐

  Is it inspected annually? ☐

  Are inspections indicated and posted as necessary? ☐

  Does a "knowledgeable human" look at inspection records ☐

  Is velometer working and calibrated? ☐

  Are they following "Elements of a Good Ventilation Program (HAS writeup)? ☐

- Observe adequacy of labeling ☐

- Look for MSDS book - Is it up to date? Is it readily a accessible to all employees at any time? ☐

- Observe battery charging stations and fork truck places. Are they clean? Is a spill practice posted? Is there a proper equipment for handling a spill (shield, apron [neoprene], neoprene gloves, water, bicarbonate)? ☐

- Look for spills. ☐

- Look for chemicals on drums. ☐

- Look for dust that may be other than dirt. ☐

- Look for evidence of food, drink, and smoking in a unauthorized areas. ☐

- Chemical storage areas.

  Clean. ☐

  Proper separation of chemicals (acids/bases, flammables, oxidizers). ☐

  Labeling. ☐

- Are there any odors or strange signs of smoke? ☐

- Any need to look further regarding heat stress? ☐

- Eye Wash Stations.

  Clean. ☐

  Inspected. ☐

- Eating Areas.

  Clean (and I mean clean). ☐

  Known responsibility for cleaning. ☐

Known frequency for cleaning (daily or each shift, depending on use). ☐

Audited. ☐

Adequate garbage cans - clean. ☐

Cabinets - clean - no food with cleaning supplies - no old food. ☐

Adequate ventilation. ☐

No smoking areas. ☐

No hard hats, gloves, or other work-related items in eating areas. ☐

- Refrigerators

  Clean [responsibility established/frequency established (weekly)]. ☐

  Should empty each week. Date items that plan to stay longer. ☐

  Keep defrosted. ☐

  Food well covered. ☐

- Vending Machines

  Clean. ☐

  No food. ☐

  Are showers used (check soap dishes)? Should they be used? ☐

  Soap available. ☐

ANNUAL SAFETY INSPECTION LIST

Personnel Safety and Health

- Proper insulation or guards for personnel protection against hot surfaces. ☐
- Personnel guards for moving parts. ☐
- Adequate drains and/or vents on lines for cleanup and maintenance work. ☐
- Freedom from bumping and tripping hazards. ☐
- Adequate personnel access passages. ☐
- Properly designed ladders and ladder gates. ☐
- Adequate grating and railings (including toe plates). ☐
- PVR discharge directed to avoid personnel injury. ☐
- Adequate provision for eye baths, safety showers and fire extinguishers. ☐
- Freedom from excessive noise exposure. ☐
- Freedom from excessive heat exposure. ☐
- Proper electrical grounding. ☐
- Freedom from toxic chemical exposure. ☐
- Adequate strength for personnel walkways. ☐
- Freedom from vapor cloud exposure. ☐
- Personnel safety equipment - SCBA, face shields, etc. ☐
- Adequate lighting and ventilation. ☐

Process Safety

- Normal and emergency vents on tanks. ☐
- Flame arrestors for vessels containing flammable or a combustible mixtures. ☐
- Relief for process vessels subject to high pump discharge pressure. ☐
- Adequate vacuum relief. ☐
- Adequate protection for:
  - Instrument air failure ☐
  - Electrical failure ☐
  - Cooling water failure ☐
  - Steam failure ☐
  - Pump failure ☐
  - Instrument failure ☐
  - Line or tube plugging ☐
- Foolproof separation of noncompatible reactive chemicals. Consider possible heat exchanger tube leaks ☐
- Adequate alarm systems. ☐
- Control valves fail safe properly. ☐
- Material of construction. ☐
- Emergency shutdown systems. ☐

Fire Safety

- Adequate fire extinguisher provision. ☐
- Fireproofed vessel legs. ☐
- Adequate emergency equipment access. ☐
- Static grounding. ☐
- Electrical classification. ☐
- Fire department number posted. ☐

Operability

- Reasonable piping layout. ☐
- Valves located for safe operation. ☐
- Adequate provision for proper disposal of pollutants. ☐
- Adequate freeze protection. ☐
- Adequate maintenance equipment access. ☐
- Adequate lighting. ☐
- Instruments and computer properly calibrated for a change of service. ☐
- Proper materials of construction. ☐
- Proper labeling, particularly hazardous chemical labeling. ☐

Procedures

- Car seal check list updated. Old copies destroyed. ☐
- Slip blind sketch updated. Old copies destroyed. ☐
- Operating manual updated. ☐
- Panel board cards updated. ☐
- Standard operating procedures updated. ☐
- Explanation for operation of safety equipment. ☐
- Tank calibration chart updated. Old copies destroyed. ☐
- T & I files updated. ☐
- Personnel and fire protection equipment check lists updated. Old copies destroyed. ☐
- Emergency procedures updated. ☐

APPENDIX 10.2

TRAINING ACKNOWLEDGEMENT FORM

TRAINING ACKNOWLEDGEMENT FORM

Please Print

NAME: _____

ADDRESS: _____

SOCIAL SECURITY NUMBER: _____

EMPLOYER: _____

JOB SITE: SUMMIT NATIONAL SUPERFUND SITE

I have attended and understood the mandatory Site specific initiation session for the above referenced job Site. This program referenced the following topics:

i) known potential hazards on Site;

ii) level of personal protection equipment required;

iii) emergency procedures for the Site; and

iv) the basics of the Site-specific Health and Safety Plan.

I further confirm that I have the required 40 hours of training to comply with 29 CFR 1910.120, have a respirator for which I have been fit tested and have been thoroughly trained on the standard operating procedures of equipment I will be operating or procedures (i.e., confined space) which I will be participating in.

_____ _____

Date Signature

APPENDIX 10.3

CONFINED SPACE ENTRY PERMIT

CONFINED SPACE ENTRY PERMIT

SITE NAME/LOCATION/REF. NO.: Summit National Site
Deerfield Township of Portage County, Ohio

WORK ACTIVITY:

Duration:_____ Issue Date: _____ Time:_____ Filled Out by:_____

POTENTIAL HAZARDS:
(System Generated)

(Work Generated)

AIR MONITORING: PRE-ENTRY_____ PERIODIC_____ CONTINUOUS_____

CONFINED SPACE ENTRY PERMIT

DATE/TIME	*BY (INIT)*	*%O_2*	*ppm CO*	*% LEL*	*OTHER TEST TYPE*	*RESULT*

ISOLATION:

Purging Required: YES ^ NO ^ PURGING CONFIRMED:

Safety Tags Required: YES ^ NO ^

VENTILATION REQUIRED: YES ^ NO ^

CONTINUOUS _____ OTHER _____

EMERGENCY RESCUE EQUIPMENT REQUIRED:

_____ Communications Device
_____ First Aid Kit
_____ Stretcher/Backboard
_____ Fire Extinguisher
_____ SCBA
_____ Other _____

_____ Winch/Hoist
_____ Harness with Lifeline (type)
_____ PPE (type)
_____ Lighting (type)

CONFINED SPACE ENTRY PERMIT

PERSONAL PROTECTIVE EQUIPMENT REQUIRED:

_____Hardhat	_____Respiratory Protection (type)
_____Safety Glasses	
_____Face Shield	_____Coveralls
_____Ear Plugs/Muff	Chemical Suits
_____Emergency Escape Pack	_____Rain Suits
_____Lanyards	_____Lifelines

_____Gloves (type)_____

_____Harnesses (type)_____

_____Other_____

ADDITIONAL WORK INSTRUCTIONS:

EMERGENCY CONTACT PHONE NO._____

PERSONS ENTERING CONFINED SPACE (PRINT NAME)

STANDBY PERSON REQUIRED: YES:_____NO:_____(PRINT NAMES)

CONFINED SPACE ENTRY PERMIT

I have reviewed and met the requirements of this permit and expect that this work shall be done safely. Entrants have been instructed on the proper confined space entry procedures, requirements and conditions.

ENTRY AUTHORIZED BY:_____ DATE:_____

All work under this permit has been completed and all materials and entrants have been withdrawn from the confined space.

_____ _____

Attendant or Entrant Date

SECTION 11

11.0 REFERENCE REPORTS AND MANUALS

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LIST OF TABLES

11.0 REFERENCE REPORTS AND MANUALS

The remediation and construction programs which have been conducted at the Site are presented in various reports and contract documents. In addition, various equipment information manuals and operation and maintenance manuals have been prepared.

A copy of the reports, contract documents and manuals are located in the on-Site library and will be maintained by SNFT as required by the Consent Decree. The documents are classified into five categories as follows:

1. Pre-Consent Decree Reports (Table 11.1).
2. Consent Decree.
3. Post-Consent Decree Reports (Table 11.2).
4. RAP Implementation Reports (Table 11.4).
5. Operation and Maintenance Manuals (Table 11.5).

TABLE 11.1

CHRONOLOGICAL LISTING OF PRE-CONSENT DECREE REPORTS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Remedial Action Master Plan Summit	August 1983	CH2M Hill	CRA-2372
Final Work Plan	July 1984	CH2M Hill	--
Final Phase II Site Investigation Work Plan	November 1985	CH2M Hill	--
Emergency Action Plan	September 1986	Horstman & Springer -Weston	--
Final Remedial Investigation Report Volume I and II, Summit National Site	1987	CH2M Hill	CRA-2372
Public Comment Feasibility Study Report Summit National Site, Deerfield Ohio	February 1988	CH2M Hill	CRA-2372
Review Comments RI/FS Documents Summit National Superfund Site, Deerfield Township of Portage County, Ohio	March 1988	CRA	CRA-2372
Conceptual Design - Pipe and Media Drain Summit National Superfund Site, Deerfield Township of Portage County, Ohio	June 1988	CRA	CRA-2372
Mass Flux Estimates - Summit National Superfund Site, Deerfield Township of Portage County, Ohio	June 1988	CRA	CRA-2732
Soil Removal Alternatives - Summit National Superfund Site, Deerfield Township of Portage County, Ohio	June 1988	CRA	CRA-2372
Soil Removal and Treatment (Appendix A to Consent Decree, Statement of Work) Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1988	CRA	CRA-2372

TABLE 11.1

CHRONOLOGICAL LISTING OF PRE-CONSENT DECREE REPORTS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Groundwater Extraction System (Appendix B to Consent Decree, Statement of Work) Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1988	CRA	CRA-2372
Site Cover (Appendix C to Consent Decree, Statement of Work) Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1988	CRA	CRA-2372
Groundwater Treatment System (Appendix D to Consent Decree, Statement of Work) Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1988	CRA	CRA-2372
Work Plan - Ash Delisting Demonstration Summit National Superfund Site, Deerfield Township of Portage County, Ohio	November 1988	CRA	CRA-2372
Consent Decree	June 1991		Site

TABLE 11.2

CHRONOLOGICAL LISTING OF CONTRACT DOCUMENTS AND SPECIFICATIONS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Contract Documents Laboratory Service Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1991	CRA	CRA-2372
Contract Documents Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1991	CRA	CRA-2372
Contract Documents Excavation Services Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1991	CRA	CRA-2372
Contract Documents Drilling and Excavating Services Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1991	CRA	CRA-2372
Bid Document Soil Remediation Summit National Site, Deerfield Township of Portage County, Ohio	March 1992	CRA	CRA-2372
Contract Documents Summit Township of Portage County, Ohio	July 1992	CRA	CRA-2372
Contract Document Soil Removal and Treatment Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1992	CRA	CRA-2372

TABLE 11.2

CHRONOLOGICAL LISTING OF CONTRACT DOCUMENTS AND SPECIFICATIONS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Bid Documents Groundwater Extraction System Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1992	CRA	CRA-2372
Contract Documents Groundwater Treatment System Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Bid Documents Site Cover Summit National Superfund Site Deerfield, Ohio	October 1992	CRA	CRA-2372
Contract Documents For Drilling Activities Remedial Construction Summit National Superfund Site Deerfield, Ohio	October 1992	CRA	CRA-2372

TABLE 11.3

CHRONOLOGICAL LISTING OF SAMPLING PROGRAMS AND DATA REPORTS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Quality Assurance Project Plan Phase II Site Investigation	October 1986	CH2M Hill	--
Quality Assurance Project Plan Summit National Superfund Site, Deerfield Township of Portage County, Ohio	July 1991	CRA	CRA-2372
Construction Quality Assurance Project Plan	September 1992	CRA	CRA-2372
Remedial Construction Quality Assurance Project Plan Groundwater Extraction System Summit National Superfund Site Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
QAPP For Summit National Superfund Site Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Remedial Construction Quality Assurance Project Plan Site Cover	October 1992	CRA	CRA-2372
Remedial Construction QAPP Soil Removal and Treatment	October 1992	CRA	CRA-2372

TABLE 11.4

CHRONOLOGICAL LISTING OF RAP IMPLEMENTATION REPORTS SUMMIT NATIONAL SITE DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Draft Remedial Design Work Plan Summit National Superfund Site, Deerfield Township of Portage County, Ohio	July 1991	CRA	CRA-2372
Draft Design Criteria Document Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1991	CRA	CRA-2372
Site Specific Health and Safety Plan Summit National Superfund Site, Deerfield Township of Portage County, Ohio	October 1991	CRA	CRA-2372
Construction Report Sediment Removal Interim Response Action	November 1991	CRA	CRA-2372
Review of Incineration Contractors Summit National Superfund Site, Deerfield Township of Portage County, Ohio	November 1991	CRA	CRA-2372
Draft Preliminary Design Report Summit National Superfund Site, Deerfield Township of Portage County, Ohio	December 1991	CRA	CRA-2372
Appendix I Alternative Evaluation Groundwater Treatment System	February 1992	CRA	CRA-2372
Review of Remedial Action Contractors Statements of Interest and Qualifications Incineration Phase Summit National Superfund Site, Deerfield Township of Portage County, Ohio	April 1992	CRA	CRA-2372

TABLE 11.4

**CHRONOLOGICAL LISTING OF
RAP IMPLEMENTATION REPORTS
SUMMIT NATIONAL SITE
DEERFIELD, OHIO**

Title	*Date*	*Prepared by*	*Available From*
Additional Assessment of Soil Treatment Technologies and Contractors Summit National Superfund Site, Deerfield Township of Portage County, Ohio	June 1992	CRA	CRA-2372
Design Brief Groundwater Collection and Treatment Systems Summit National Superfund Site, Deerfield Township of Portage County, Ohio	August 1992	CRA	CRA-2372
Health and Safety Plan Remedial Construction Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Development of Bidder List Soil Removal and Treatment Summit National Facility Trust Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Remedial Construction Work Plan Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Draft Pre-Final Design Report Summit National Superfund Site, Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372
Design Calculations Groundwater Extraction System Site Cover Summit National Superfund Site Deerfield Township of Portage County, Ohio	September 1992	CRA	CRA-2372

TABLE 11.5

CHRONOLOGICAL LISTING OF
OPERATION AND MAINTENANCE MANUALS
SUMMIT NATIONAL SITE
DEERFIELD, OHIO

Title	*Date*	*Prepared by*	*Available From*
Summit National Facility Trust Operation, Maintenance and Monitoring Plan Summit National Superfund Site Deerfield Township of Portage County, Ohio	October 1992	CRA	CRA-2372

SECTION 12

12.0 QUALITY ASSURANCE PROJECT PLAN (QAPP)

(TO BE SUBMITTED TO USEPA AND OEPA FOR REVIEW AND APPROVAL PRIOR TO COMMENCING SAMPLING AND ANALYTICAL ACTIVITIES)